The IRON AGE

Vol. 159, No. 8 February 20, 1947

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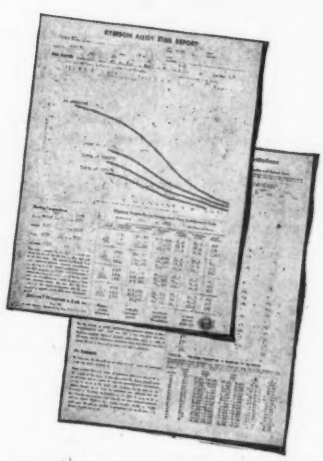

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RYERSON STEEL

The IRON AGE

ESTABLISHED 1855

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February 20, 1947

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"Congress Should Pass a Law!"

THE hurricane of talk and opinion on labor legislation has died lately to fitful gusts and eddies. To be sure, pending labor bills number some 50 in the House and 30 in the Senate, with hearings on the latter well under way. But in the absence of a crisis, public interest has waned and smoke-filled rooms are echoing to the sounds of political realities—so much so that the NAM has charged the new Republican Congress with such preoccupation with 1948 elections as to sell out to organized labor.

It was considerably easier, however, for an infuriated and frightened public in December to cry "Congress should pass a law!" than it is to fulfill that mandate. There is justifiable concern that hasty or ill-conceived legislation well could prolong and intensify labor-management animosity and distrust and lead in the end to widening a breach which already is dangerously wide. What is desperately needed is something with a touch of statesmanship—something to shore up the crumbling walls, so that leaders in both industry and labor can slowly rebridge the breach as a matter of mutual selfish interest.

A labor bill, to be passable, could safely alter existing laws or create new laws aimed at recapturing certain managerial prerogatives or at the elimination of gross abuses of basic economics. But any provisions likely to weaken drastically union strength or endanger union hegemony, or to further expand government power, are likely to encounter bitter and relentless opposition. They might well lead in the end to results neither anticipated nor desired.

Labor hierarchy will find it most difficult to mobilize public opposition to alterations in the Wagner Act returning to the employer the right of free speech, the power to discipline employees and the right to petition for bargaining elections. Further alterations or new laws could safely penalize violations of contracts (by either labor or management), jurisdictional and sympathy strikes and secondary boycotts. Indefensible abominations such as feather-bedding and drastic limitation of apprentice training by craft unions should be subject to far closer scrutiny than they are. On the other hand, any effort to eliminate industry-wide bargaining, the closed shop or the check-off would pose such a threat to labor that it could well precipitate a shotgun wedding of the CIO and the AFL into a pressure group of a power to be reckoned with. Certainly a long period of labor turmoil would be inevitable.

The growing popularity in many quarters of labor courts superimposed on the existing judicial system as a means of conquering labor disputes is something to be approached with caution. For some decades as many as 23 countries (Russia and Germany included) have employed labor courts, and, once established, they are never completely abandoned. Perhaps they have some merit in public utilities and benumbing country-wide strikes. But for industry in general, some form of last-ditch arbitration willingly written into contracts would seem to offer a better alternative to both labor and management.

Aside from what may be written into the law of the land, something else is needed. Somewhere, somehow, the bitter animosities and ingrained distrust of these past years must be buried. Labor and management must regain the vision of common destiny—of high profits and high wages, the twin requisites to a dynamic economy for a free people.

T. W. Lippert

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INLAND STEEL

► Recent tests show that increased output achieved by use of oxygen as an open-hearth bath reagent will save from 1 to 3 hr per heat. It is particularly valuable for making low carbon steels. Coupled with previously announced applications of oxygen as a fuel conditioner for openhearths and blast furnaces the practical development of this process adds up to a significant steelmaking development.

► The few users of paint spray booths who have tested the idea are impressed with the possibilities of a sprayed plastic coating for lining the interior walls. Instead of laboriously scraping off dangerous paint accumulations they merely take a few minutes to peel off the plastic coating and then apply a new one.

► A large aluminum producer is contemplating installation of a Sendzimir type mill—probably for use in rolling foil for packaging.

► Conversion of wartime developments to peacetime products is requiring a much longer time than had been generally expected. Typical of this is an army air rescue device which could find wide use in the yachting field where the problem of converting the service product into a commercial peacetime item has required more than a year. High manufacturing cost explains why some other warborn products have not yet hit the market.

► Drop forge hammer manufacturers are working toward automatic feeding of steel into the hammer. When such equipment becomes available, perhaps within a year, the cost of volume forgings production may be expected to drop sharply.

► It is reported that the British are planning to send a group of specially fitted trucks on a South American tour to display their latest export products. The Dutch are organizing a similar expedition to cover the South African market.

► A portable hardness tester which weighs less than 2 lb and can be used on rounds and flats up to 1 in. gives Rockwell B or C scale readings. Round and V anvils and diamond and ball point penetrators are interchangeable.

► U. S. manufacturers of heavy equipment who once tapped foreign markets by building branch plants overseas are now having difficulty in rebuilding old plants or locating new ones. The obstacles are unskilled and war weary labor combined with foreign exchange and political restrictions.

► A new principle in induction heating permits bringing heat treated parts to specific temperatures and holding them at those temperatures for predetermined periods of time. Also, this same equipment permits shop production of a variety of work coils and connection to the machine with a universal chuck.

► Some interesting results are expected from the low temperature research program being undertaken by Arthur D. Little, Inc., with the Collins helium Cryostat which can maintain any temperature down to that of liquid helium, or -457°F. Several of these surprisingly small and compact units are now being built.

► A British research group reports discovery of a process to double the tensile and transverse strength of gray cast iron. Impact resistance is said to be more than doubled with negligible increase in hardness and little or no difference in machinability. The process is confidential and few details are available now.

► The difficulty of getting or training skilled labor has forced metal fabricators in many lines to buy simple types of fabricating machinery even at a sacrifice in the efficiency which more complex machinery would yield. Also, high production machinery makers are constantly adding controls and devices to permit operation by semi-skilled personnel.

► Stainless steel spinning wire for telephone cable suspension in highly corrosive atmospheres, just introduced by a midwestern manufacturer of cable spinning equipment, is reported to last from 3 to 5 times longer than heavily coated wire formerly used where corrosive conditions are severe.

Use of Oxygen in the Op

By G. V. SLOTTMAN
Manager, Technical Sales Div., Air Reduction Co., Inc., New York

and

F. B. LOUNSBERRY
Vice-President and Technical Director, Allegheny Ludlum Steel Corp., Brackenridge, Pa.

THE openhearth process has attained its present importance because of its ability to melt and refine steel under controlled conditions. While the regenerative furnace makes this process practicable, the flame temperatures which could be obtained by regeneration are limited by the permissible refractory temperatures. As a result, the temperature differential between the heating gases and the steel bath is so slight, particularly during the refining period, that the rate of heat absorption by the bath is very slow. This is particularly apparent when making low carbon steels. Since the melting point of the bath progressively increases as the carbon and other undesired elements are eliminated, the working temperature of the furnace must be increased to the limit of the refractories, in order to drive heat into the bath. Moreover, substantial quantities of ore must be added to obtain a reasonable rate of carbon elimination and additional heat is required to compensate for the chilling effect of the ore-carbon reaction. The rate of producing low carbon steels thus depends largely on the heating power of the furnace, and is relatively low.

Numerous suggestions have been made to increase the furnace heating power during both melting and refining periods, such as by the enrichment of the combustion air with oxygen or more recently by the use of the oxygen conditioned oil-air flame[1,2] and considerable work is now being done along these lines.

Use of oxygen as a bath reagent to replace iron ore either in whole or in part for the purpose of speeding up carbon reduction during the refining period, dates back at least a quarter of a century and includes the work of Bigge[3], Browne[4] and Chelius[5]. However, the first practical large-scale application of oxygen to an openhearth bath was made in August 1946, at the Brackenridge plant of the Allegheny Ludlum Steel Corp. Since that time, a large number of heats have been made and considerable experience has been gained in adapting the process to the manufacture of various types of steels. High purity oxygen was used in the tests reported in this article.

To use oxygen effectively, it was necessary that a simple means be provided for introducing the oxygen into the bath. At first refractory-coated pipes were used, immersed in the bath to a depth of 6 in. or more, and fed into the bath at a rate equal to that of the pipe consumption. It was found, however, that uncoated steel pipe was satisfactory when the oxygen flow through the pipe was sufficient to cool the pipe, since the rate of burn-off was sufficiently low to make the operation practical. This simple equipment was also portable and could be easily moved around the average congested charging floor to make room for other operations.

Oxygen Injection Equipment

The amount of oxygen required will depend upon the size of the furnace. For large furnaces it is indicated that pressures of 75 to 125 psi at flow rates of from 25,000 to 50,000 cu ft per hr be provided. It is convenient to locate the oxygen take-off to each furnace adjacent to the furnace control stand. Fig. 1 is a schematic sketch of the oxygen supply system.

The individual supply line to each furnace from the main oxygen line should be 2½ in. in diam and equipped with a shutoff valve, a suitable indicating oxygen flowmeter either of the orifice or rotameter type, and

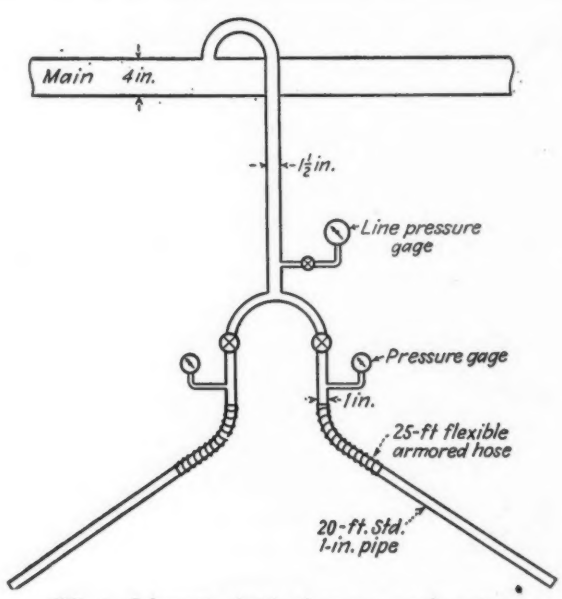


FIG. 1—Schematic sketch of oxygen supply system.

[1] *"The Use of Oxygen in the Openhearth," Steel, Dec. 3, 1946.*
[2] *"Oxygen in Steelmaking,"* THE IRON AGE, *Nov. 28, 1946, p. 47.*
[3] *U. S. Patent No. 1,513,735.*
[4] *U. S. Patent No. 1,570,229.*
[5] *U. S. Patent No. 2,226,967.*

Openhearth Bath . . .

Oxygen as a bath reagent in metallurgical processes is being widely discussed by steelmakers, and is the subject of active investigation. Results obtained to date at the Brackenridge plant of Allegheny Ludlum Steel Corp., indicate that a new tool has become available for working a steel bath both faster and more efficiently—a tool whose value will increase as experience is gained in its use. This article is a preliminary report on the first large-scale application of oxygen to an openhearth furnace bath, in which the authors describe operating technique.

a pressure gauge. These should be so placed as to be easily observed by the operator controlling the flow of oxygen at the take-off valve. The take-off taps can be of 1½ in. diam pipe equipped with 1½-in. globe valves. It is advantageous to have more than one take-off point to facilitate changing pipes and to permit use of several pipes simultaneously when desired. Connection to the lance pipe is made with 1¼-in. high pressure hose both ends of which are equipped with suitable couplings for easy attachment to the take-off taps and to the lance pipe. Lance pipes from ½ to 1 in. in diam have been used, the preference being for the ¾ or 1 in. sizes on large furnaces.

All piping, hose, valves and meters should be specified for oxygen service and should be installed in accordance with the standards set for use with oxygen. It is good practice to insert a 12-in. length of brass pipe in the furnace line downstream from the meter and shutoff valve to act as a fire stop protecting the main supply line.

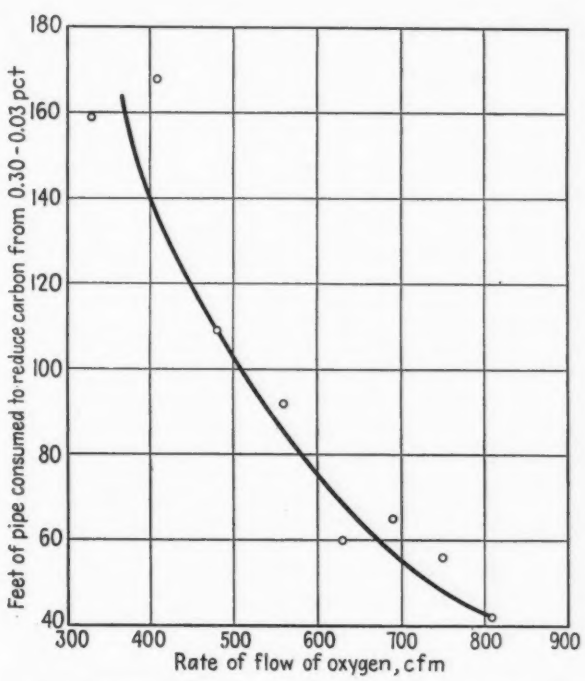


FIG. 2—Curve showing effect of oxygen flow on pipe life.

Applying the Oxygen Lance

When an oxygen boil is required, the first helper inserts the lance pipe into the furnace through the wicket hole, generally, of the center door, and signals for the desired oxygen flow. It is important to establish a good flow of oxygen through the pipe before the pipe can be heated to its ignition temperature by the furnace gases. The lance pipe is then thrust into the metal bath through the slag cover, to a depth of some 4 to 6 in. As the pipe is slowly consumed it is pushed forward into the furnace to maintain the desired depth of immersion. Manipulation of the lance pipe is facilitated by the fact that when the pipe is immersed in the slag, a violent blowing of the slag can be observed, and a considerable backward thrust of the pipe is felt, caused by the kinetic energy of the oxygen stream. As the pipe enters the metal, the agitation of the slag ceases, and the back thrust on the pipe decreases sharply because of the absorption of the oxygen by the metal. Since the point of immersion of the pipe can be clearly observed through the wicket hole, the lance operator rapidly acquires facility in manipulating the pipe so that the oxygen stream enters the metal at a reasonable depth.

The Oxygen Boil

The appearance of the bath during the oxygen boil varies with the prevailing carbon content as well as with the bath temperature. In high carbon ranges, over 0.40 pct, considerable activity is observed at the point of immersion, which subsides, as the carbon content falls, to a mild boil covering the entire area of the bath, with small bubbles of carbon monoxide breaking through the slag cover and burning with characteristic blue flames. As the carbon content falls below 0.06 pct, the boil rapidly diminishes and becomes again concentrated around the point of immersion. Bath temperature seems to play a considerable part in determining the activity of the boil, particularly in the low carbon ranges. Below about 0.06 pct, the iron oxide content of the slag increases rapidly. Studies are being made of the oxygen content of the bath during the oxygen boil which will furnish the basis

for a comparison of the course of reaction with that of the normal slag-metal reaction.

In order to establish the fact that oxygen could be efficiently injected directly into the steel bath using bare steel pipes, a study was made of the effect of oxygen flow on the rate of pipe burn-off at operating pressures varying from 40 to 110 psi corresponding to flow rates of 330 to 810 cfm, (see fig. 2). It was found that pipe consumption at low rates of flow was so great as to make the operation impractical, but that as the flow rate was increased to some 700 cfm the operation became feasible. In reducing the carbon content of a 90-ton heat from 0.30 to 0.03 pct, the pipe burn-off rate dropped rapidly from 160 ft at 50 psi pressure to 40 ft at 110 psi pressure. Pipes used were of 1 in. diam and 20 ft 8 in. in length, of which some 15 ft were consumed in each test. Pipe life can be lengthened by operating at pressures higher than 110 psi, but from the slope of the curve it is evident that flowing pressures above 90 psi insure a practical operation.

A study was similarly made, at Allegheny Ludlum, of the effect of oxygen flow on the efficiency of oxygen usage, expressed in terms of cubic feet of oxygen per point-ton (0.2 lb) of carbon removed. For the purpose of this study, all heats were worked without ore additions. Over the flow range of 330 to 810 cfm, the average cubic feet of oxygen used per point-ton of carbon removed in the range 0.20 to 0.10 pct was 5.1, and from 0.20 to 0.06 pct was 7.0. Within the limits of the experimental error, which was particularly high in the carbon range under 0.06 pct, no significant variation in oxygen efficiency with flow rate was noted.

The rate of carbon removal varies with the rate of oxygen flow and with the oxygen efficiency. Fig. 3 is a plot of the heat time to reduce carbon from 0.25 to 0.03 pct at various operating pressures. This curve reflects the lower oxygen input at low rates of flow as well as the time consumed in changing the large number of pipes required. It is evident that substantial savings in total heat time are only possible at high rates of flow.

To determine the field of application for an oxygen boil in steelmaking, oxygen was added to the bath at carbon contents varying from 1.2 to 0.02 pct. In high carbon ranges, the rate of carbon reduction is extremely rapid, as high as 0.05 pct per min, and depends largely on the permissible flow of oxygen. The efficiency of oxygen usage is high, being considerably below the theoretical of 3.2 cu ft of oxygen (measured at 70°F and normal pressure) per point ton of carbon oxidized to carbon monoxide, since the violent boil accelerates the normal action of the slag and furnace atmosphere in removing carbon. In low carbon ranges, the oxygen efficiency falls off sharply, resulting in an abrupt change in slope of the "oxygen-carbon content" curve in the region of 0.06 pct C, the rate of carbon drop falling to 0.002 to 0.006 pct per min. Under 0.03 pct C, rates of carbon drop as low as 0.0002 pct per hr and even lower were obtained. The rate of carbon drop during the oxygen boil, while low in low carbon ranges, is considerably higher than can be obtained through the use of ore or by poling, and it is in the manufacture of low carbon steels that the process appears to have greatest utility.

Attempts to remove large amounts of carbon in the high carbon range with oxygen alone, resulted in an excessive heating of the bath. Oxygen, however, can be very useful in accelerating the rate of the ore reaction by rapidly establishing a bath temperature favorable to a rapid ore boil and by compensating for the heat absorbed from the bath during its course. The heat evolved by the oxygen reaction, both in high and low carbon ranges, is such that care must be taken to avoid overheating the bath, causing bottom boils or damage to the furnace lining. The rate of firing can

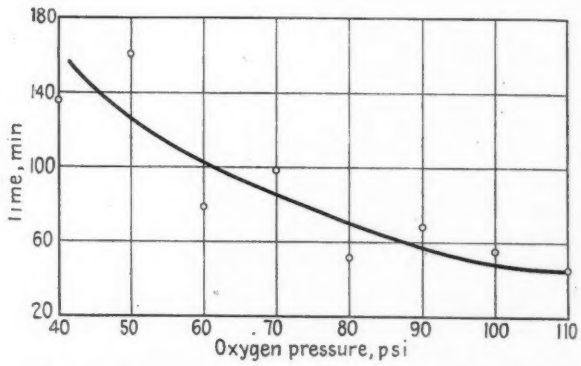


FIG. 3—Heat time required to reduce carbon from 0.25 to 0.03 pct at various oxygen pressures.

be reduced, or ore and scrap iron added to the bath to control the temperature. In actual practice, control of the furnace temperature is not difficult to maintain, provided the proper precautions are taken. In the course of hundreds of heats using oxygen for decarburization, no serious bottom boils have been encountered which could be definitely attributed to its use.

The course of a typical 90-ton low carbon heat is shown in fig. 4, which gives the variation in carbon, manganese, and slag iron oxide content with the volume of oxygen used. In reading this graph, a horizontal line may be drawn at any oxygen volume, whose intersection with the various curves can then be projected perpendicularly to give the concentration of the constituents in the bath and slag at that moment. This method of plotting eliminates the time factor involved in changing pipes. All carbon analysis are on the basis of killed samples. The total time required to drop from 0.29 to 0.02 pct C was 1 hr 2 min. The manganese content falls more slowly than the carbon, until the carbon content reaches 0.06 pct, and then falls rapidly as the oxygen content of the bath increases. In very low carbon ranges, the slag oxygen increases rapidly and corresponds to a high concentration of oxygen in the steel. Some work has been done, using two pipes instead of one, which indicates an increase in the efficiency of oxygen use by reducing the distance through which oxygen must diffuse to react with the carbon.

The most important factor limiting the economy of the oxygen boil in making low carbon steels, is the determination of the carbon content. Since a rapid method of determining the bath carbon content in ranges below 0.03 pct is not available, the judgment of the melter must be relied upon to decide when to shut off the oxygen. As can be seen from fig. 4, some

20,000 cu ft of oxygen were used to bring the bath from 0.29 to 0.03 pct C, and 16,000 additional cu ft required to drop the carbon below 0.02 pct. It is highly possible, that when more experience has been gained in correlating the rate of the oxygen boil with bath temperature and slag condition, that metered amounts of oxygen can be added to the bath to bring about the desired carbon reduction.

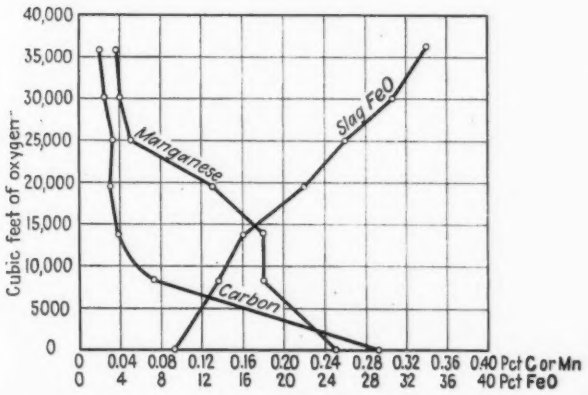


FIG. 4—Metal and slag analyses plotted against oxygen volume.

In the higher carbon ranges, the use of oxygen alone appears to offer less advantage than the combination oxygen-ore boil. Not only is there a difficulty in controlling the furnace temperature, but the use of ore has an economic advantage in adding cheap metallic units to the charge. A compromise between the inexpensive but slow-acting ore addition and the more costly oxygen addition seems likely to become a standard practice. The accelerating effect of oxygen additions and the decelerating effect of ore additions can be clearly observed from comparisons of carbon drop rates when using ore, oxygen, and ore-oxygen boils. Oxygen appears to offer considerable advantages as an adjunct to ore in working high hot metal heats, involving considerable oreing down of the carbon content.

The many factors of cost and steel quality involved in the use of oxygen as a bath reagent are still under investigation and can only be reported in rough outline. Preliminary studies indicate that the cost of the oxygen addition will vary depending on the length of the oxygen boil, and can be balanced by the saving in other operating expenses. The saving in time of heat, reflected in increased output, will amount to 1 to 3 hr per heat and a corresponding saving in fuel will be realized, particularly in the making of low carbon steels. Less ore will naturally be used, reducing the limestone consumption and also the loss of metal in the reduced slag volume. Ingot yield is slightly better when using oxygen, because of the smaller slag volume. Steel quality, another factor being studied, is no worse, and particularly with respect to cleanliness may be found to be better than with ore practice. No trouble has been experienced with the furnace refractories, and longer campaigns may indicate substantial savings in refractory cost. The large amount of development work now being done by the industry should soon yield the background of experience which will provide a more detailed answer to the question of economics. However, even at this early date, it is evident that the use of oxygen offers a new tool to the steel maker for controlling the bath reactions in the openhearth furnace.

Acknowledgment

The authors wish to make acknowledgment to P. M. Hulme, J. H. Berryman and J. M. Crockett of the Air Reduction Co. and C. A. Scharschu and G. E Hilliard of the Allegheny Ludlum Steel Corp. for their assistance in the development and application of this new technique.

Rapid Method of Ore Analysis

EARLY perfection of a time saving and reasonably accurate spectrochemical method for general analysis of ore samples appears probable on the basis of an investigation conducted by the Bureau of Mines. A report issued by the bureau states that employing the so-called total energy method which makes use of a direct-current arc, it determined the distribution of germanium, tin and lead in ore samples with an accuracy comparing favorably with that achieved by chemical methods.

Further research and development will be necessary before other types of ore can be analyzed spectrochemically, but results for germanium, tin and lead indicated that the total energy method will be quite suitable, the bureau stated.

Much more rapid than chemical method of analysis, spectrographic methods are expected to be of great value to the chemical and metallurgical industries. The spectrograph permits determining simultaneously the concentrations of several elements.

Atmospheric Exposure Tests on Nonferrous Metals

A SYMPOSIUM covering a series of atmospheric exposure tests carried out over a period of many years on nonferrous metals and alloys has been published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, and is available at a cost of $1.75 with heavy paper cover. The symposium includes papers on corrosion of rolled zinc; copper alloys, lead and tin, and aluminum base alloys. The concluding discussion is entitled "Tracking Troubles in Atmosphere Corrosion Testing." A number of reports of committee B-3 on corrosion of nonferrous metals and alloys is also given.

Selecting the Proper Cutting Fluid

INDIVIDUAL operators, as well as foremen and department heads, usually have their own ideas as to which is the best cutting fluid to use on any particular job. The choice is dictated sometimes by past experience and a thorough knowledge of what results can be obtained, sometimes by prejudice, or the mere fact that some particular fluid has always been used on that job and no one has ever thought to change it.

There will, of course, always be personal preference, and it is not possible to specify that one particular coolant is the best for any particular job. Nevertheless, engineers at Westinghouse Electric Corp., Pittsburgh, have prepared the accompanying charts which will serve as an excellent guide for all ordinary applications.

It will be noted that the recommendations in table I are listed in two columns. In the left hand column they are ranged in order of decreasing effectiveness, i. e., the first choice listed will give better results than the second, and so on. In the right hand column the same items are listed in order of increasing expense, the first item being the least expensive. The choice of a fluid may therefore be governed by balancing its effectiveness against its cost, and taking into account such factors as the volume of work to be performed, the finish required, and the possible percentage of coolant recovery from the chips. In tables II and III they are listed only in order of their effectiveness.

TABLE I—Cutting Fluids for Drilling

Material	Cutting Fluid	
	Order of Decreasing Effectiveness	Order of Increasing Expense
Aluminum and alloys	Kerosene Kerosene and lard oil Soda water	Soda water Kerosene Kerosene and lard oil
Brass	Dry Kerosene and mineral lard oil (Deep holes) Soda water	Dry Soda water Kerosene and mineral lard oil
Magnesium and alloys Bronze	Mineral lard oil Soda water Dry	Dry Soda water Mineral lard oil
Copper	Mineral lard oil and kerosene Soda water Dry	Dry Soda water Mineral lard oil and kerosene
Monel metal Mild steels Tough alloy steels Steel forgings Cast steel Wrought iron	Mineral lard oil Sulfurized oil Soda water	Soda water Mineral lard oil Sulfurized oil
Manganese steel Cast iron	Dry	Dry
Malleable iron	Dry Soda water (Deep holes)	Dry Soda water
Tool steel	Mineral lard oil and kerosene Kerosene Mineral lard oil	Mineral lard oil Mineral lard oil and kerosene Kerosene
Micarta, bakelite Fiber, asbestos, Hard rubber, ebony	Dry	Dry

TABLE II—Cutting Fluids for Machine Reaming

Material	Cutting Fluid
Aluminum and alloys Magnesium and alloys	Mineral lard oil Kerosene Soda water
Brass and bronze	Soda water
Cast iron	Dry
Cast steel	Lard oil Mineral lard oil Soda water
Copper	Lard oil Soda water
Malleable iron	Soda water Mineral lard oil
Monel metal	Lard oil Soda water
Mild steel	Mineral lard oil Soda water
Tough alloy steels Steel forgings	Mineral lard oil Sulfurized oil Soda water
Tool steel	Lard oil Sulfurized oil Soda water
Wrought iron	Mineral lard oil Soda water
Micarta and bakelite	Mineral lard oil

TABLE III—Cutting Fluids for Tapping

Material	Cutting Compound
Aluminum alloys	½ lard oil and ½ kerosene
Magnesium alloys	Light mineral oil
Brass and bronze	Light mineral oil Dry
Cast iron	Small amounts of mineral lard oil, soap, or tallow
Copper	*Cresol z-3 and paraffin oil #3313-4 and paraffin oil
Malleable iron	Sulfurized oil
Monel metal	Lard oil and kerosene Sulfurized oil
Wrough iron Mild steel	#3313-4 and paraffin oil
Tool steel	Sulfurized oil Lard oil and kerosene
Stainless steel	Sulfurized oil
Tough alloy steels Cast steel Steel forgings	Sulfurized oil
Rubber, hard Fiber	Dry
Micarta, Moldarta and other molded plastics	Dry

* Cresol z-3 is an excellent heat dissipator and does not stain the work. It is rather expensive but may be used in a 10 pct solution of paraffin oil.

New Gravity Drop Hammer Features Pneumatic Ram Lift

A NEW tool for the forging shop which promises to expand the usefulness of the gravity drop hammer, cut down forging time and reduce the time required for adjustment and repair of gravity drop hammers is the Ceco-Drop recently announced by Chambersburg Engineering Co., Chambersburg, Pa. This machine, shown in the accompanying illustration, is a new type gravity drop hammer with a positive pneumatic air lift actuating the ram. The new Chambersburg hammer is offered in a range of ram weights from 50 to 20,000 lb.

Forge shops have always recognized that the steam or air-powered drop hammer is a more powerful and more productive tool than the board hammer. Nevertheless many shops find it necessary to employ the more limited capacity of the board drop hammer because of the difficulty of obtaining or training operators with the proper skill needed for discretionary control of ram pressures.

It is expected, however, that the more powerful Ceco-Drop hammers may now take their place in some fields reserved to the steam drop hammer due to the need for heavier forging action than that available in the heaviest gravity hammers. The smaller sizes of Ceco-Drop hammers may be expected to displace to some extent the less efficient belt or rope drop hammers for light forging work.

The Ceco-Drop hammer, as compared with a board hammer of equal size, delivers more blows per minute, completes forgings in fewer blows and requires less time for readjustments and repairs. The Ceco-Drop delivers 10 to 20 pct more blows because of the faster ram-lifting action permitted by the use of air or steam as the actuating medium. Its operation requires an average 60 pct increase in power consumption.

With allowance for slippage and for reduction in roll speed as the load is applied, a board hammer lifting at approximately 375 ft per min can deliver 60 3-ft blows per min. Since the ram fall speed of the two types of gravity hammers is identical, the size of the air or steam cylinder for the Ceco-Drop has been worked out to permit an increase of 40 pct in ram-lifting speed at air or steam pressures of 100 psi. The overall 20 pct increase in blow frequency is believed to be twice the speed that can be gained by the device of decreasing the ram-fall distance of the board hammer. The latter would involve a corresponding decrease in the energy applied by the ram. The higher speed of the Ceco-Drop hammer permits forging stock at higher temperatures.

In comparative tests between the Ceco-Drop and a board hammer of equal or heavier ram and with equivalent ram travel, the new hammer is said to have produced forgings with 4000 to 8000-ft-lb less energy.

The construction of the Ceco-Drop hammer permits a lower center of gravity which minimizes the loss of forging energy through movement and vibration. In a 2000-lb Ceco Drop, the center of gravity of the hammer at impact is some 10-in. above the die line. This is just half the distance above the die line of the center of gravity of a 2000-lb motor-driven board hammer and less than 60 pct of that distance on an equivalent belt driven board hammer.

Many of the interruptions to production inherent to board drop hammer operation have been eliminated in the construction of the Ceco-Drop. There is no adjustment to the lifting mechanism. The rod is clamped in its up position by a mechanism which grips it in a positive fricton clutch, replaceable n a few minutes when necessary.

Stroke adjustments on the Ceco-Drop are made in a fraction of the time required by a board hammer. The Ceco-Drop dog weighs about a pound and can be changed in a few seconds. The knock-off dog of a 2000 lb board drop hammer weighs about 50 lb and is more difficult to adjust. The adjustment of the roll release mechanism is still more cumbersome. It is estimated that at least a quarter of an hour is saved on every Ceco-Drop stroke adjustment.

The life of the maple boards in a board drop hammer varies with shops and jobs. Most forge shops would be pleased with one board change per hammer per week. Board changes require about a half hour, but conservative estimate of the life of the Ceco-Drop piston rod is 200 hr of production time. Rod changes can be made in half an hour.

The Cec-Drop, air or steam powered, has its motive power remote from the vibration of the forge shop. This factor is expected to minimize unproductive hours for power plant maintenance work.

The operating valve of the Ceco-Drop is a spool type valve and moves in a horizontal plane for a positive positioning of the piston. A control valve installed in the supply ports permits the operator manually to block or unblock the ram when necessary.

The anvil assembly is identical with that of the Chambersburg model J board hammer. A new Ceco-Drop may be installed on the old anvil, thus avoiding duplication of foundation and anvil costs.

How to Use Carbide

By H. A. FROMMELT
Consulting Engineer, Chicago

FIG. 9—The stringy nature of low carbon steels frequently results in a build-up on the cutting edge as shown by the dark spots on the otherwise bright portion of the blade edge.

THE application of carbide milling to the steel series of engineering materials runs headlong into some extremely interesting problems when this technique is applied to those steels whose carbon content is in the 5 to 15 point bracket. Wrought iron, significantly enough, presents almost identical problems, and hence is included in this discussion. After a brief consideration of the nature and general character of these milling difficulties, the solutions will be presented in terms of shop applications that are of current record.

The problem could be simply stated that these materials react so disastrously upon carbide that tool life is reduced drastically unless the proper precautions are taken. However, this may be an oversimplification, and as a matter of fact low tool life here results primarily from two factors. The shop refers to these materials as sticky and stringy. This quite picturesquely describes the true nature of these materials which lack the slipperiness that permits chips to flow over the cutting tool with little abrasive effect. When milling wrought iron and low carbon steels, there is a tendency for the material that is being removed to build up on the cutting edge. This is referred to simply as build-up, and results directly from the stringy and sticky nature of these steels.

The first article of this series appeared in the issue of Feb. 13. It covered the fundamental concepts of carbide milling, stressing the importance of cutter angles and power requirements.—Ed.

Fig. 9 shows what is meant by build-up. The evil effect of this phenomenon on the cutting edge can easily be imagined. The build-up clings tenaciously to the carbide, and with subsequent chips attempting to ride over these artificial humps on the cutting edge, the carbide is torn away. What actually happens here is the extraction or pulling out of the cobalt or binder for the hard carbide particles. This elimination of the matrix permits the carbide particles to drop out.

Chips of these materials are difficult to eliminate during the milling operation. This is due not only to the sticky and stringy nature of the material, but is largely due to the fact that the chip does not take a definite form or shape, the elimination of which from the clearance space around the blade becomes difficult and even impossible for the cutter. Fig. 10 shows a chip clinging to the cutting edge, the results of which naturally are disastrous. The chip wedges itself during successive revolutions between the OD of the cutter blade and the face of the workpiece. This crowding effect results in a build-up of pressures and an increase in friction that is extremely damaging to carbide.

This faulty chip elimination can easily result in chips balling up into pellets the size of marbles, whereupon the pressures increase to the point where these pellets weld to the cutter body or the blades.

These phenomena of build-up and faulty chip elimination are, unfortunately, associated with all cutting materials, including high speed steel. They are, therefore, not characteristic of carbide milling alone. Perhaps the only successful solution leading to respectable machinability and cutter life has come in recent developments with the application of carbide to the milling of these difficult materials.

The term boiler plate is a commonly used shop term for a straight low carbon steel. Since its machinability and the difficulties that tend to reduce cutter life are similar if not identical with those encountered in the milling of the other low carbon steels, including wrought iron, boiler plate will be included in a discussion of the solution to these milling problems.

These materials can be successfully milled with extremely satisfactory, if not high, life between grinds. These are results of recent developments and an intensive program of research whose objective is to conquer such obstacles. These materials are widely used in American industrial and engineering manufacturing activities, and in some instances cannot easily be replaced. A high production rate for components of these compositions therefore frequently, if not always, is extremely desirable. A discussion of the practical solutions follows in terms of everyday shop operations. reference to which will be made specifically in the remainder of this presentation.

Wrought Iron

From the metallurgist's standpoint wrought iron is definitely not a steel. From the machine operator's or processor's standpoint, and particularly for the present purposes, its machinability in milling will be considered along with the various low carbon steels. As previously noted, it reacts to carbide in milling just as do the other steels.

Fig. 11 shows a wrought iron milling operation that is being performed in a vertical knee-type machine on

Cutters for Milling

. . . Low Carbon Steel and Wrought Iron

The application of carbides to the milling of low carbon steels is discussed herein. The problem of the built-up edge is discussed, and information is given on the most suitable cutting and clearance angles with specific examples of milling boiler plate, SAE X1020, wrought iron and low carbon steel. Speeds and feeds are considered and the K-land and K-factor are explained.

a component 5 x 5 in. cross-section and 15 in. long. This workpiece, part of an electrical assembly, required milling on four sides (not the ends).

This can best be accomplished without the use of a fixture, and by holding in a sturdy vise as shown. The milling machine is a Milwaukee CSM having 50 hp on the spindle and 5 hp on the table. It should also be noted here that this machine tool is equipped with a 340 lb flywheel 16 in. in diam. While the same operations could undoubtedly have been performed on a machine without the flywheel, there can be no question but that this represents good engineering and machine tool practice, resulting in a smooth flow of power to the cutter.

The 8-in. diam cutter used in this operation and shown in fig. 12 has eight solid carbide blades mechanically held. These solid carbide blades are treated very much like a single point tool insofar as both the grinding and the setting are concerned.

The power available in this machine places no restrictions whatsoever upon the rate of metal removal. Or at least this is true within limits that would have been considered fantastic only very recently.

This component could not be successfully milled—in fact it was impossible to even begin its milling—until a high surface foot rate was selected. This operating characteristic tends to overcome the disadvantages of high friction due to the sticky and stringy character of the chips, and also assists in the elimination of chips that otherwise do not clear themselves from the clearance space around the blades and tend to take free but disastrous rides.

The first approach to the solution of this otherwise difficult milling problem is the selection of a high spindle speed and therefore a high surface foot rate. The surface foot rate for wrought iron can be put down once and for all as in the neighborhood of 800 to 1200 fpm or an average of 1000 fpm. Hence in this operation a spindle speed of 500 rpm was selected with an 8-in. cutter, resulting in a surface foot rate of 1050 fpm.

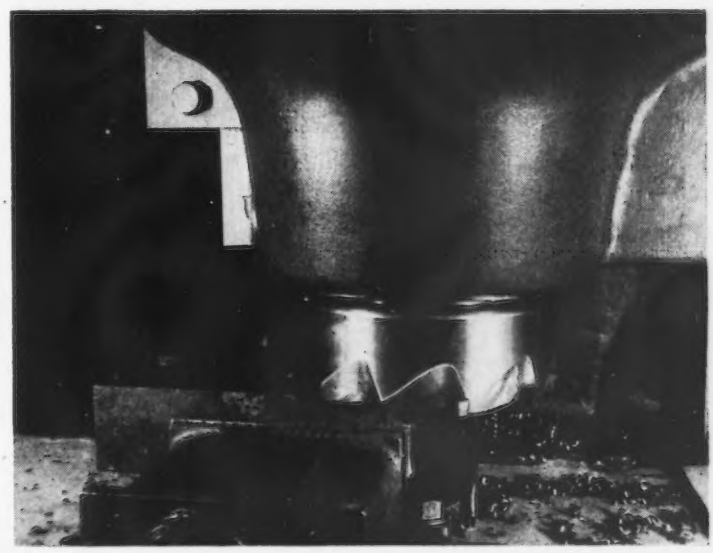
Where spindle speeds in this bracket are not available, it is quite possible that these materials can still be effectively milled, providing other precautions are taken.

The traditional face clearance angles used for steel are not adequate in the milling of these materials. In fact face clearance angles can be considered as critical.

ABOVE

FIG. 10—Low carbon steel chips do not tend to take a definite form, and frequently cling to the cutting edge as shown here. This is a common cause of carbide tool failure.

o o o



RIGHT

FIG. 11—Typical setup for carbide milling wrought iron blocks. Note that a sturdy vise is considered adequate for holding the work when proper cutting angles and speeds are employed.

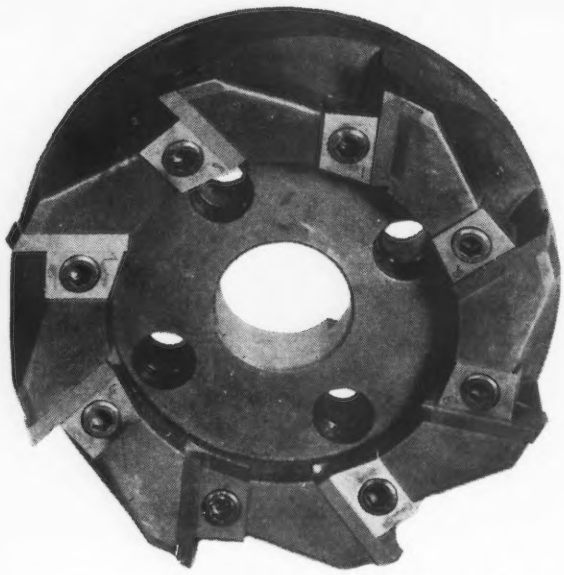


FIG. 12—Designed specially for carbide milling, this 8-in. diam, eight tooth cutter incorporates a 7° negative radial rake with blades mechanically held by wedges and setscrews.

and unless these are increased to 15°, failure will result.

The cutting angles such as the radial rake and the axial rake angles, including the corner angle, are not critical in the sense that a variation of a few degrees more or less effect the result. In this connection it is interesting to note that the radial rake angle may be either positive or negative. These materials are sufficiently soft and the cutting pressures are sufficiently low, that a positive radial rake angle may be used. In the mill shown in fig. 12 the axial rake angle is always a 7° negative, since this is also the wedging angle used to hold the solid carbide blade in position. Experiments have been conducted with both positive radial rake and negative radial rake angles with little or no difference in the actual milling results, including the K-factor or the horsepower per cu in. per min required to mill these soft materials.

In the milling of the component shown in fig. 11 the customary negative radial rake angle used for steel is again specified. But the specification of a 15° face clearance angle is essential. Moreover this face clearance angle is ground to the edge, leaving no land such as is sometimes specified and used. Grinding the face clearance angle to the edge will not result in a breakdown of the blade, and results actually in better life or pieces between grinds.

K-Land

The cutting face of these solid carbide blades that comes in contact with the workpiece during the milling process is here referred to as the K-land. This is shown in fig. 13. Its width should be, for good operation, not greater than the actual chip thickness. In milling, the actual chip thickness is usually about 50 pct greater than the theoretical.

Chip thickness or chip load is calculated by dividing the feed rate in ipm at which the table carries the workpiece into the cutter, by the rpm, and this in turn by the number of blades. This simple arithmetical operation results in its first step in the feed per revolution (dividing the feed rate by the rpm) and in the second step it results in the feed per tooth, or what is commonly referred to as the chip load or chip thickness.

If the chip thickness is calculated as 0.010 in. the actual chip thickness is very likely in the neighborhood of 0.015 in. This dimension will vary, depending upon the nature of the material to be milled, its elastic limit, and other physical and metallurgical characteristics. But it is probably safe to assume that the actual chip thickness will be in the neighborhood of 50 pct greater than the theoretical. Hence, if the theoretical chip thickness is calculated at 0.010 in., the actual will be in the neighborhood of 0.015 in.

Returning now to the K-land and its specifications. For milling operations in which a chip load in the neighborhood of 0.010 in. is called for, the K-land is frequently ground to approximately 0.020 in. Where a much thicker chip (where power is available) is being removed, the K-land should be increased proportionately. This in brief is the reason for the specification of the width of this K-land. Only this much of the solid carbide blade comes in contact with the

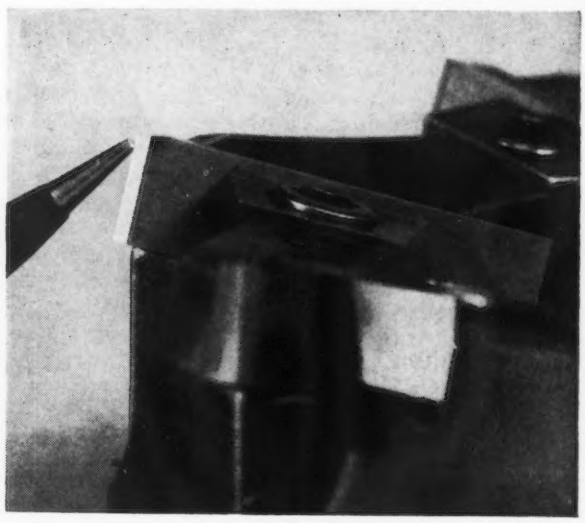


FIG. 13—The highly polished portion of the blade which comes into actual contact with the workpiece is known as the K-land.

workpiece once during each revolution. No other portion of the blade is affected by the milling, and hence the blade setting angle in the cutter design is entirely different from the cutting angle. As shown in fig. 12 the blade setting angle is 15° positive, whereas for the present operation on wrought iron the cutting angle is actually 7° negative.

Another very important effect that results from varying the width of the K-land is its effect upon chip form and formation. The narrower the K-land the more open is the chip; the wider the K-land the more tightly curled is the chip as it is milled from the parent block or workpiece. This important fact is made use of as an important though partial solution to the problem of milling low carbon steels. These sticky and stringy materials produce chips that are not easily disposed of, but if they are tightly curled there is less likelihood of their being interfered with during the cycle of chip ejection, or that phase of the process when the chip is being ejected or thrown clear of the cutter body. Frequently the widening of the K-land

has solved otherwise impossible milling problems.

All of these aids were enlisted in solving the problem of milling the wrought iron block shown in fig. 11.

The table feed selected is 60 ipm. This is the top table feed available on this machine. This results in a chip load of 0.015 in., theoretical, or approximately 0.025 in. actual. Here the K-land is ground to a width of approximately 0.050 in. which not only is sufficient for the actual chip thickness, but assists in curling the chip tighter.

Since the depth of cut here is 0.125 in., the cu in. per min rate of removal is 37½. It is significant that the net horsepower to the spindle for this operation is 14, and hence the K-factor is 0.4. This means that the horsepower required to move a cu in. of this metal is 0.4 hp. This is extremely low and yet characterizes this technique. Obviously such low hp per cu in. per min readings are the result of complete absence of chip interference which can quickly build up such pressures that even a large milling machine is quickly stalled.

Milling

Fig. 14 is a sketch of a large generator pole whose specification calls for a carbon content between 5 and

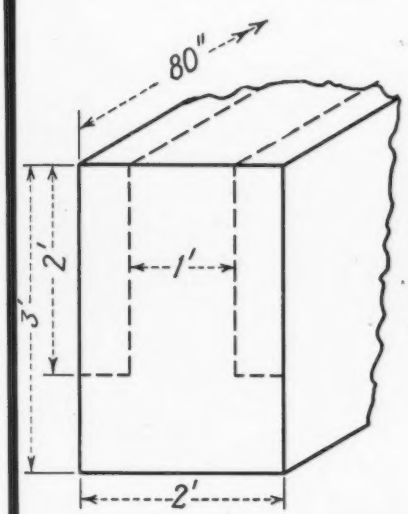


FIG. 14—Low carbon steel generator poles with a carbon content between 5 and 15 points are successfully milled with carbide cutters despite the fact that high surface speeds are not available on planer type milling machines.

15 points. These generator poles are, in the rough, approximately 2 ft wide, 3 ft high, and 80 in. long and are to be milled as indicated by the dotted lines.

This operation is performed on a suitable planer type milling machine having a 30 hp motor. Two such poles are set on the bed of the machine end to end and hence there is continuous milling for more than 160 in.

A 10-in. diam facemill is used similar to that shown in fig. 12. This cutter has ten blades of solid carbide held mechanically. The operation is significant and interesting because it was solved in spite of the fact that a high surface foot rate was not available.

The spindle speed of 150 rpm, resulting in a surface foot rate of 390, represents the limitations imposed upon this operation. Nevertheless, these large components were successfully milled at a table rate of 15 ipm, representing a chip load of 0.01 in. The depth of cut was 0.250 in. The metal removed from each section is 6x24x80 in., on a total of 23,040 cu in. for the two pieces.

It is important to note, however, that a face clearance angle of 15° and an unusually wide K-land in relation to the chip thickness is specified. The K-land in this instance is 0.030 in., whereas the actual chip thickness is not greater than 0.015 in. Because these two specifications were called for, these generator poles were successfully milled. In fact the cutter life for this operation is 20,000 sq in., which is unusually high for milling.

Fig. 15 shows a motor pole of extremely low carbon steel, the dimensions of which are approximately 2x3x16 in. These poles must be finished as shown and hence all four sides must be facemilled, and then two sides milled to a shoulder.

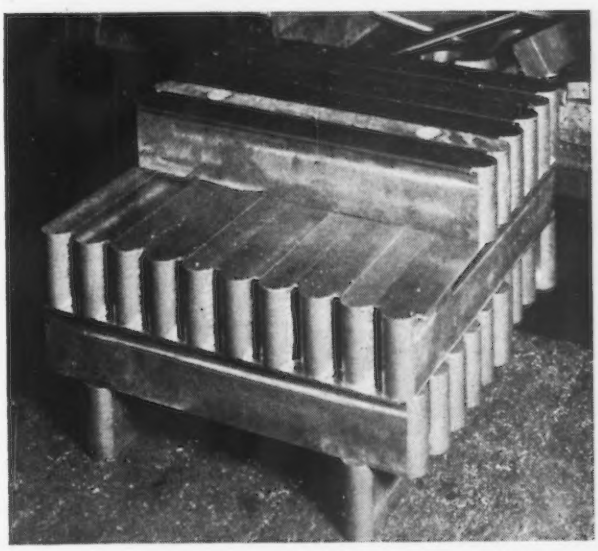
Here again the problem encountered when milling low carbon steels or materials that are sticky and stringy is uppermost. There is a tendency to build up on the cutting edge, chips stick or weld to the blade, and chips are not readily eliminated, all of which adds up to disaster for the solid carbide blade.

A surface foot rate of 800 was selected for this operation and proved successful. With a 6 in. diam facemill this calls for a spindle speed of 512. In order to keep the power within the machine limitations, in this instance a Milwaukee 4K having a 20 hp motor, it was necessary to restrict the table feed to 15 ipm. The thickness of the shoulder to be milled was approximately 0.311 in. and the depth 2.75 in. Under these conditions approximately 13 cu in. of metal are removed per min, and while this does not represent the full power of the machine it was deemed advisable to restrict the feed rate to 15 ipm. A knee-type horizontal milling machine was used with a simple three point clamping fixture.

The face clearance angle was again 15° and proved to be an important factor in the successful milling of these components. The 7° negative radial rake angle customary for steel was also specified. The width of the K-land was approximately 0.020 in. and this is sufficiently wide in relation to the chip thickness to provide chips curled tightly enough to permit their easy and quick ejection.

Under these conditions the cutter life was entirely satisfactory. For the plain facemilling operation on all four sides the average number of pieces milled between grinds was approximately 150. For the shoulder

FIG. 15—By using a surface speed of 800 fpm these motor poles of extremely low carbon steel can be milled without difficulty with a stock removal of 15 cu in. of metal per min.



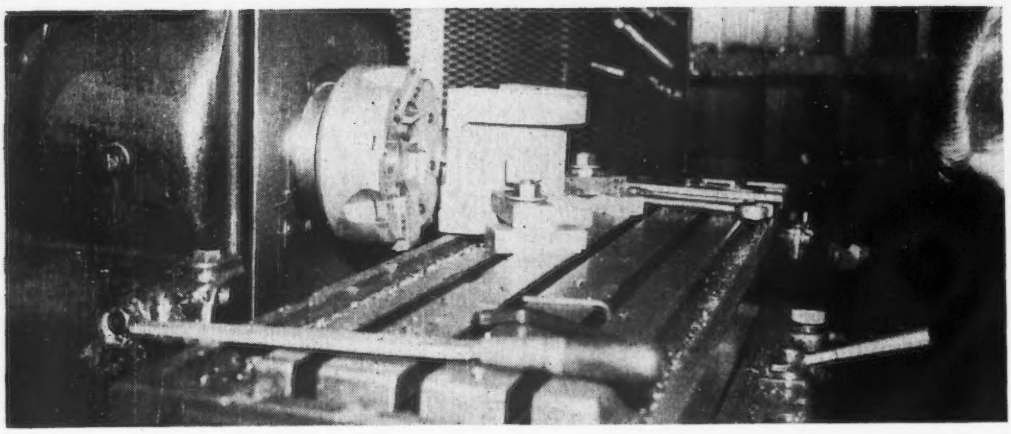


FIG. 16—Bearing caps made from boiler plate specification material proved impossible to mill with high speed steel cutters. As shown here they were successfully milled with carbide cutters.

cut the cutter life was approximately 75 pieces between grinds. The variation in these cutter life figures may be explained as follows: The light face-milling cut is not accompanied by any vibration in the machine, whereas in the operation of milling to a shoulder the depth of cut is such that some vibration is inevitable. This results in reducing the cutter life by chipping or flaking of the cutting edge.

Boiler Plate Bearing Caps

Boiler plate is the shop term for low carbon steel, the other physical and metallurgical characteristics of which bring its machinability, generally speaking, into the lower brackets. The bearing caps shown in fig. 16 are of boiler plate specification, and the milling of the mating surfaces presents an interesting problem.

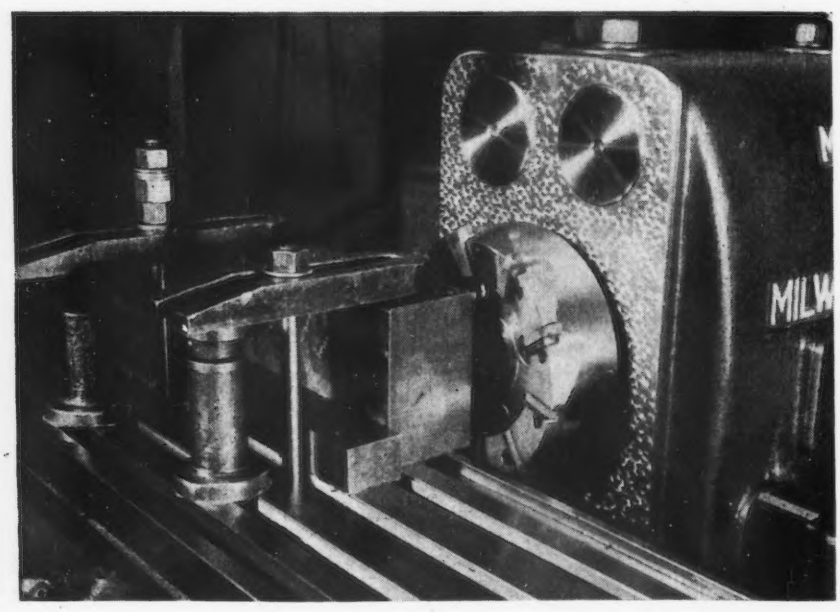
At the outset it may be of interest to know that this milling operation is difficult, if not indeed impossible, with high speed steel cutters, the result of which may be summarized as follows: Milling five bearing caps resulted in the complete dulling of three high speed steel cutters and, as the final straw, were rejected in inspection. The finish was entirely unsatisfactory. High speed steel will not stand up under the extremely high surface foot rates required for the successful machining of this material. At low surface foot rates boiler plate tears, and the resulting finish is extremely bad. In addition, the friction of removing metal under these conditions results in a quick dulling if not breakdown of the high speed steel.

With an 8-in. diam cutter having solid carbide blades mechanically held, a spindle speed of 250 rpm was selected. This resulted in a surface foot rate of approximately 520, and while on the low side, represents the limitations imposed on this operation by the machine tool equipment.

The feed rate was restricted to 15 ipm, again a limitation imposed by the machine both as regards its general condition and the lack of power to the spindle. However, in spite of these limitations these bearing caps were successfully milled not only at greatly increased cutting rates, but at a life far above that possible with any other cutting material.

Both the K-land and the face clearance angle specifications are called for as an aid to good milling on these components.

FIG. 17—By the use of an exceptionally wide K-land to produce tightly curled chips, and a face clearance angle of 15° ground to the edge, blocks of SAE X1020 can be milled without difficulty.



Here again let it be remarked that the face clearance angle of 15° is ground into this portion of the blade right to the edge. No land remains. The K-land width for this operation was approximately 0.015 in. which is considerably wider than the actual chip thickness. These aids to good milling of low carbon steels assisted in obtaining good cutter life.

SAE X1020

The milling operation on SAE X1020 is selected for final consideration in this article because this material is typical not only of other materials similar in nature, but also belongs to the family of low carbon steels insofar as its machinability characteristics are concerned.

In spite of the fact that this material, quite widely used during the recent war as a substitute, has 20 points of carbon, the addition of the X gives it a stringy and sticky character; hence its place in the

present article and its interest for those seeking a solution to the successful machining of these widely used engineering materials.

Fig. 17 shows the setup used to mill this component. Here a 10 hp knee-type vertical milling machine is employed. The power requirements obviously are not large since the amount of metal being removed from the workpiece, which is approximately 2x2x14 in. long, will not be large.

The sticky and stringy nature of SAE X1020 is immediately obvious. The chips roll up into marble size and even weld to both the blade and the cutter body. A very light cut that normally would require only a few horsepower even at the high table feed possible with carbide, results in stalling of the machine after a few revolutions. Chip interference here is exaggerated and calls for drastic action.

The 4-in. diam facemill, again using solid carbide blades mechanically held, is ground for the customary steel operation except for the clearance angle and the width of the K-land. Here again the face clearance angle is 15° and the K-land is widened to approximately 1/32 in. This wide K-land assists in curling the chips tighter, thus making it possible for the cutter to eliminate them with little or no interference.

The effect of a face clearance angle of 15° again ground to the edge, leaving no land, is extremely important and may be considered as one of the critical factors in the successful milling of this otherwise difficult if not impossible material.

The solution to the problem of milling wrought iron and low carbon steels, including boiler plate and such similar materials as SAE X1020, may be summed up as follows:

(1) Use a high surface foot rate, average 1000 fpm. If this is impossible due to machine limitations, use the highest available and rely upon the remaining two aids;

(2) Use a 15° clearance angle ground to the cutting edge, leaving no land. This is a must and should be considered as a critical factor in the successful milling of these materials;

(3) Use a K-land two to three times wider than actual chip thickness. The wide K-land will assist in curling the chips tighter and thus making their disposal from the cutter body less difficult.

Part III of this series of articles on carbide milling will appear in the next issue.—Ed.

British Report Method of Doubling Gray Iron Strength

A SIMPLE treatment of gray cast iron which will double its tensile and transverse strength, more than double its impact resistance, with only a negligible increase in hardness and little or no difference in machinability, is reported to have been developed by the British Cast Iron Research Assn. While very few details are available of the method of obtaining the improved mechanical properties, one editorial comment in an English technical publication predicts that it will "extend the range of uses of cast iron very considerably."

The preliminary announcement of the development was made recently by Harold Hartley, president of the British research group. The development of the process is still in the confidential stage, but several provisional patents have been filed, Mr. Hartley said. He emphasized that in the association's laboratory iron with a tensile strength of 45,000 to 67,000 psi has been produced by casting an ordinary pig iron "suitably treated."

In his discussion of this development, Mr. Hartley said that iron, as cast, is being successfully produced with a graphite structure of nodular or spherical form instead of being in the stringy, elongated flake structure usually found in gray cast iron. This nodular graphite structure resembles the temper-carbon form of graphite found in malleable cast iron, after the lengthy annealing of a white iron casting, but this new material does not possess the properties of malleable cast iron, which can be subjected to considerable deformation and distortion prior to fracture. Nevertheless, it has a small measurable elongation, 1 to 2 pct with the higher carbon and 2 to 3 pct with the lower carbon contents.

In a melt of hematite pig iron of 3.9 pct C and 2.6 pct Si, a standard 0.875 in. test bar gave, in the untreated and treated states respectively, tensile strengths of 34,700 and 59,400 psi tensile, and 65,850 and 107,300 psi transverse. The treatment increased shock resistance from 13 to 47 ft-lb and the Brinell hardness from 185 to 215. The most significant feature of this new development was said to be that it is applicable to the medium and high as distinct from the low carbon and silicon irons.

The material possesses the properties of the present high duty cast irons without their special compositions or treatments, and yet remains readily castable and machinable. This does not mean, the report stated, that it will supplant high duty irons; but rather that it will be used as a base for producing high duty cast irons, the properties of which will no longer be determined by the flake graphite structure. The same remarks apply to the special duty cast irons, austenitic, martensitic, high silicon, high chromium, etc., used for heat and corrosion resistance, or for other special properties. Another feature of the treated material was reported to be its uniformity in properties from piece to piece.

The process, it was stated, can be used successfully on cupola melted irons, but much work has to be done on the founding, physical and mechanical properties before it can be applied in the industry. At least a dozen investigations have to be carried out. It is most important to establish British priority in this field, Mr. Hartley said, and the technique cannot yet be disclosed, in part because the patent situation is not yet clear and in part because of problems relative to the supply of materials involved.

The evolution of this virtually new material will not only put ordinary castings into a new class mechanically, and doubtless with respect to heat and corrosion resistance, and provide a new basis for the development of high duty and special cast irons, but it will involve a new approach to the design of iron castings and will undoubtedly influence every branch of the industry.

Rubber Mountings

By H. J. KNELL
Plant Engineer,
Wright Aeronautical Corp.,
Wood-Ridge, N. J.

ONE of the 13 jolt molding machines which were mounted on rubber to minimize impact from the jolting.

THE problem of overcoming the vibration induced in surrounding areas by operation of 13 jolt type molding machines was solved at the Wood-Ridge, N. J. plant of Wright Aeronautical Corp. by the use of rubber mountings. This use of rubber mountings on jolt type molding machines is believed to be the initial application of such mountings to eliminate impact from these machines. This installation was made in connection with the consolidation of the seven Wright engine plants into a single plant at Wood-Ridge. This plant is now the largest aircraft engine plant operating in the United States.

Thirteen of the jolt type molding machines had to be placed in a straight line covering a distance of less than 150 ft and within 50 yd, on one side, of a research laboratory containing sensitive instruments. The location of the machines was also such that they would be within 50 yd of high precision machine tools. The molding machines are used to make the molds for front and rear housing, supercharger, nose section, oil sump and other parts for the Wright Cyclone 18 cylinder aircraft engines.

The machines were of five types and varied in gross weight from 3000 to 22,000 lb. The weight of the loaded flasks ranged from 1500 lb to 5000 lb. In some instances the total weight, including the loaded flask and jolt table, was between 3 and 5 tons.

Past experience with the impact produced by these machines showed the jolt would be detrimental to efficient plant operations for a number of reasons: (1) The footings, columns and roof of the building were of concrete construction and were in danger of being fractured by shock produced by the operation of the machines; (2) within close range of these machines was located the materials testing laboratory where sensitive experiments and tests were conducted, a place where disturbances could not be tolerated; (3) activity in nearby offices and drafting rooms, where close to 1000 persons were employed in engineering and office work, would be definitely handicapped by the vibration; (4) experience showed that green cores sagged from excessive disturbances; and (5) precision tools and grinders in the building might also be affected. A jar would tend to make grinder wheels skip and cause unevenness on the workpiece.

In consideration of these factors, it was decided to isolate these machines from the building to eliminate the impact produced. The method followed in the project was to secure the machine to a large concrete (inertia) block and to rest this large block on neoprene rubber mountings. The impact would then be absorbed by both the inertia block and mountings.

A concrete block of the proper weight and size was determined for each of the five types of machines. In one instance this block weighed approximately 40,000 lb. Standard practice called for a deflection of $\frac{3}{8}$ in. max for the rubber mountings when the machine delivered its impact. To meet these requirements, type 700-B rubber mounting manufactured by the U. S. Rubber Co. was used in stacks of three mountings each (see fig. 1). These mountings had a loading limit of 6200 lb and were 8 in. sq and 2 in. thick in size. A $\frac{1}{2}$ in. diam rod was placed through holes in the mountings to keep the stack in line.

Minimize Impact From Jolt Molding Machines

Use of rubber mountings to minimize the vibration of surrounding areas caused by operation of jolt molding machines is described in this article. In what is believed to be the first such installation, 13 machines at the Wright foundry are so equipped and their operation in production causes no disturbance to a nearby laboratory, precision machine shop, and engineering department. Method of installing the mountings is described in detail.

The first step in the installation of these units was the construction of concrete pits in which the inertia blocks were to be placed. The walls and floor of the pits were of reinforced concrete. The pits were made 3 ft longer than the inertia blocks to create maintenance room. The average dimensions of these pits were 12x13x8 ft deep. Holes to secure the rods fastening the rubber mountings in line were provided in the pit floor. Fig. 2 shows the details of the construction of the pit and the inertia block and the positioning of the rubber mountings.

A steel rectangular tank fabricated to the outside shape of the inertia block was made up. These tanks were made of 3/16 in. steel plate and had ¾ in. diam steel reinforcing rod welded from side to side of the tank in the interior of the tanks. The stacks of rubber mountings were set in place on the pit floor.

The tank then was lowered by a chain hoist into the pit and set on the rubber mountings. After the tank was in place, rubber wear plates were placed between the sides of the tank and the pit walls to prevent side sway. These rubber plates were U. S. Rubber Co. No. 902-C type.

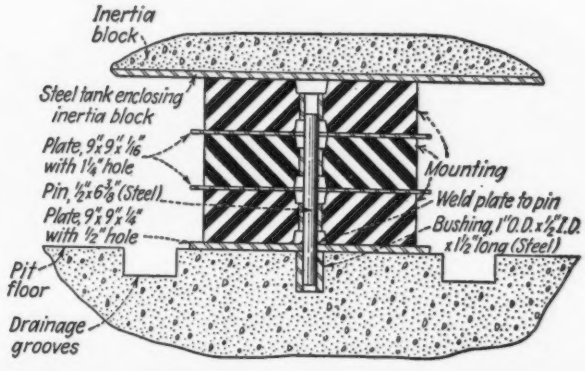
Concrete was then poured in the tank in 20 in.

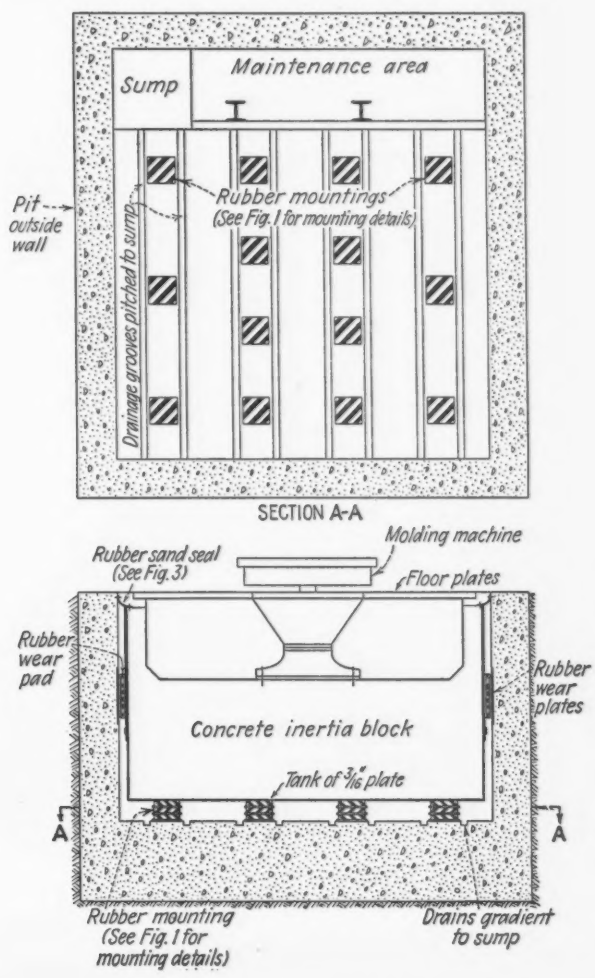
BELOW

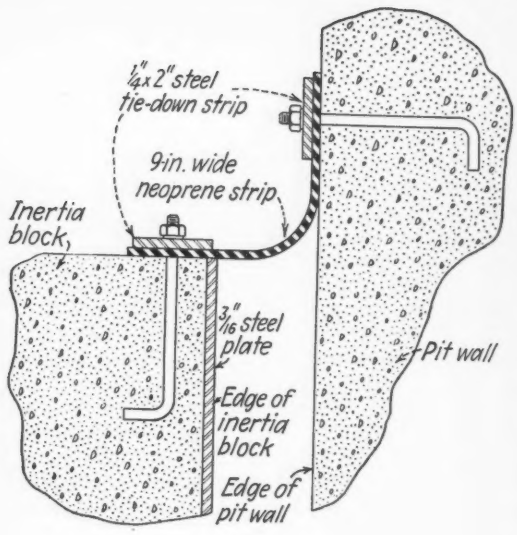
FIG. 1—Method of installing the rubber mountings on the bottom of the pit.

RIGHT

FIG. 2—A section of the molding machine pit showing location of rubber mountings with respect to the inertia block. Small plan view above shows distribution of the rubber mountings (three in each stack) on the pit floor.







ABOVE

FIG. 3—Details of the sand seal used to prevent sand from working into the pit and causing damage to the mountings.

o o o

RIGHT

FIG. 4—View of the pit showing maintenance area and one wall of the inertia block. Arrow indicates one section of the sand seal.

layers to prevent warping of the steel plates due to excessive weight of the concrete. Anchor bolts were provided in the concrete to bolt the molding machine fast to the inertia block. When the concrete was satisfactorily hardened, the molding machine was bolted to the newly finished inertia block.

To offset the possibility of sand working into the pit and causing friction and damage to the mounting, a sand seal was devised, as shown in fig. 3. This consisted of long strips of 3/16 in. thick neoprene rubber, 9 in. wide, fastened on one side to the pit wall and the other on the inertia block. Enough play was left for any movement that might be caused by the impact of the molding machine. This formed a perfect seal against sand entering the pit.

The last detail of the project was to install steel deck plates over the pit and around the machine. A view of the maintenance area allowed in each pit and one side of the inverted block is shown in fig. 4.

To test the installation, the jolting machines were operated under full load, first individually, and then in unison to create maximum impact. Results were very highly successful and no shock was felt when these machines were in operation. So far as is known, this is the initial application of rubber mountings to eliminate impact from this source, and the results obtained have justified the installation.

Cutting Flexible Glass With Carbide Saws

DIFFICULTIES in keeping sharp the saws used for cutting out shapes for aircraft ice resistant propellers and wing tips have been solved in a simple manner by one manufacturer. The material used, 1/16-in. thick sheets of a glass-impregnated fabric, proved so abrasive that ordinary saws averaged only 20 min between regrinds.

In an effort to put the operation on a production basis, the manufacturer tried a saw tipped with Carboloy grade 905, a grade of carbide possessing extremely high wear resistance. Service life between grinds increased several hundred times than previously obtained from the high speed steel saws.

Cutting is performed with a Black & Decker hand-guided power saw at a speed of 20,940 fpm without coolant, using hand feed. The Carboloy tipped saw was used in this manner in regular production for 90 days without regrinding.

Metallurgical Applications of The X-Ray Diffraction Spectrometer

In this, the second part of a three-part article, the author presents a study indicating the effects of heat treatment on the X-ray diffraction patterns of SAE 3312 steel and 24S aluminum, and the effects of cold working on the X-ray diffraction pattern of SAE X4340 steel. An interesting aspect of this presentation is that the author correlates the metallurgical structure of each specimen with the corresponding diffraction curve.

By JOHN L. ABBOTT
Senior Metallurgist, Wright Aeronautical Corp., Wood Ridge, N. J.

o o o

A NUMBER of typical metallurgical specimens were analyzed by the X-ray diffraction spectrometer to determine the diffraction patterns characteristic of the various structures produced by some of the most common variations in the heat treatment. The diffraction patterns were coordinated with the metallographic structures and the chemical and physical properties.

The specimens examined included the following: (1) basic steel structures (specimens heat treated to produce structures predominately martensitic, ferritic or austenitic), (2) heat-treater structures of AMS 6250 (SAE 3312) carburizing steel (0.13 C, 0.44 Mn, 0.26 Si, 3.64 Ni, 1.45 Cr), (3) the effect of cold working steel by shot peening heat-treated AMS 6412 (SAE X4340) steel 0.37 C, 0.71 Mn. 0.23 Si, 1.87 Ni, 0.76 Cr, 0.27 Mo) (4) heat-treated structures of AMS 4035 (24S aluminum alloy, 4.35 Cu, 1.30 Mg, 0.29 Fe, 0.30 Si, 0.47 Mn).

The basic steel structures were examined to determine the variations in the characteristic X-ray diffraction patterns of the three major iron alloy structures—martensite, ferrite and austenite. The specimens used were; water quenched SAE 1080 steel (0.79 C, 0.81 Mn), annealed Armco iron (0.02 C, trace Mn, trace Ni) solution treated 18-8 stainless steel (0.05 C, 0.75 Mn, 8.80 Ni, 17.0 Cr).

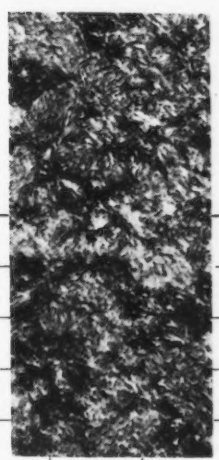
In each series of curves, the strip-chart recorder

In the first part of this article, Feb. 13, p. 50, (THE IRON AGE), the author discussed general operation of the Geiger counter X-ray spectrometer and presented diffraction curves indicating effects of apparatus variables on diffraction patterns. In a subsequent issue, the author describes the use of the apparatus in performing chemical analyses.

Mr. Abbott, the author, is now application engineer, Industrial X-Ray Div., North American Philips Co., New York.—Ed.

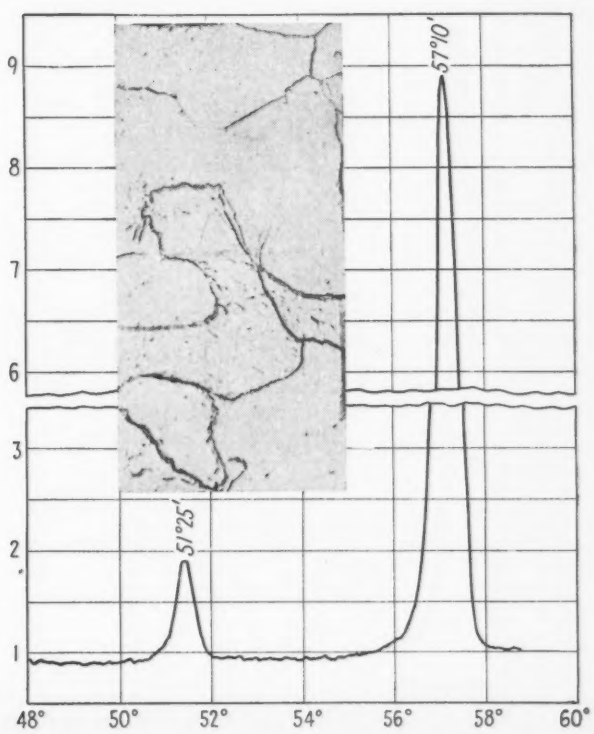
BELOW

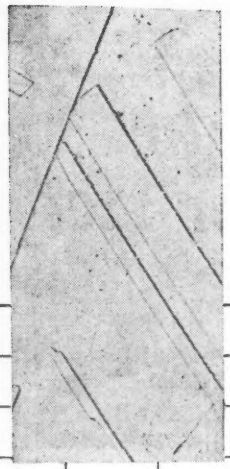
FIG. 6—Diffraction curve and photomicrograph of SAE 1080 steel austenitized at 1500°F and water quenched. Structure martensitic; hardness 67-69 Rc. 500X. Nital etch.



RIGHT

FIG. 7—Diffraction curve and photomicrograph of Armco iron annealed for 4 hr at 1300°F and furnace cooled. Structure ferritic; hardness 43-44 RA. 500X. Nital etch.



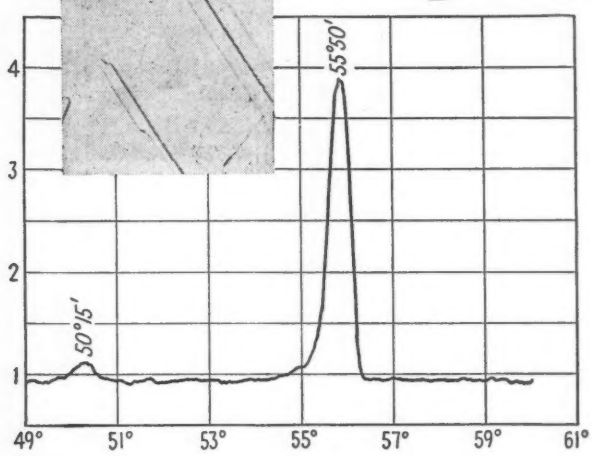


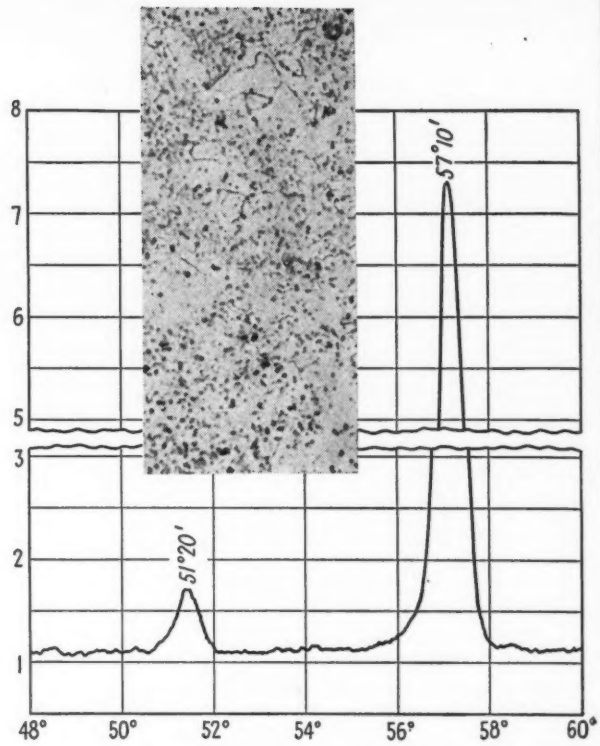
LEFT

FIG. 8—18-8 stainless solution treated at 1800°F and water quenched. Structure austenitic; hardness 49-50 RA. 500X. Glyceregia etch.

RIGHT

FIG. 9—AMS 6250 (SAE 3312) hot-rolled bar stock as received. Structure predominately ferritic; hardness 17-18 RC. Nital etch. I=15, D=70. 500X.





control settings were held constant as noted, to provide a qualitative comparison of the most intense lines (peak lines). Iron radiation (Fe, Kα) was used for all ferrous alloys specimens. The recorder intensity control was set at 15 and the damping control at 70. The diffraction curves for these specimens are shown in figs. 6, 7 and 8, and the corresponding microscopic structures are shown in the photomicrographs. The diffraction angles and the relative intensities of the peak lines are tabulated in table I. Thus the characteristic radiation peaks for these structures are as follows:

Martensitic—Intensity of 1.7 (above the background) at approximately 56° 55′. Actually the martensitic line consists of a doublet at about 56° 50′ and 57° 00′.

Ferritic—Intensity of 7.9 above the background at 57° 10′.

Austenitic—Intensity of 2.9 above the background at 55° 50′.

It should be noted that the intensities of the lines as given above are relative and only true for the particular intensity setting of the recorder. The minor peaks occurring in the vicinity of 50° to 52° also show

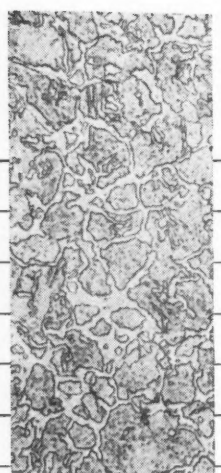


FIG. 10—AMS 6250 steel carburized at 1700°F for 4½ hr and furnace cooled. Structure predominately bainitic with heavy carbide network; hardness 48-49 RC. Nital etch. I=15, D=70. 500X.

FIG. 11—AMS 6250 carburized and annealed at 1300°F for 4 hr and furnace cooled. Chiefly tempered bainite and carbide network; hardness 30-31. RC. Nital etch. I=15, D=70. 500X.

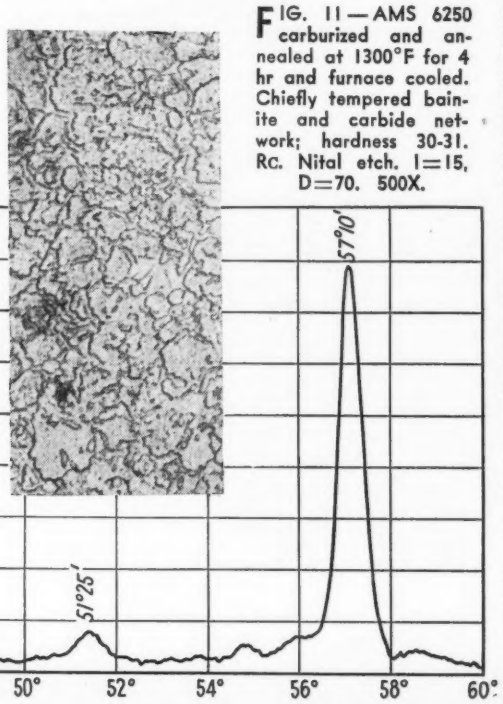


TABLE I

Diffraction Angles and Relative Intensities of Peak Lines

Figure Number	SPECIMEN	Major Lines			Background Intensity	Minor Lines	
		Angle	Intensity	Width		Angle	Intensity
6	Martensitic	56° 50′	2.7	3°	1.00	51°-52°	0.05
7	Ferritic	57° 10′	8.9	2°	0.90	51° 25′	1.90
8	Austenitic	55° 50′	3.9	1°	0.95	50° 15′	1.10
	AMS 6250 Carburizing Steel (SAE 3312)						
9	Hot-rolled bar stock	57° 10′	7.3	1° 07′	1.10	51° 20′	1.70
10	Carburized and furnace cooled	57° 05′	4.1	1° 03′	0.90	51° 20–30°	1.15
11	Carburized and annealed	57° 10′	5.0	1° 05′	1.10	51° 25′	1.40
12	Oil quenched from 1500°F	56° 40′	3.1	.....	.....	.....	.....
		56° 50′	3.1	3° 10′	1.20	51°-52°	1.30
13	Oil quenched and tempered	55° 40′	2.4	.....	.....	.....	.....
		57° 00′	3.0	3° 00′	1.00	51°-52°	1.05
	AMS 6412 Steel (SAE X4340)						
14	Quenched and tempered	57° 06′	4.5	1° 00′	0.90	51° 25′	1.20
15	Heat treated and shot peened to 0.016 in.	57° 04′	4.35	1° 10′	0.95	51° 20′	1.20
	AMS 4035 Aluminum Alloy (24S)						
16	Normal heat treatment	38° 44′	7.9	1° 05′	1.35	40° 14′	2.10
		44° 43′	8.5	1° 10′	1.30	43° 00′	1.25
17	Slow cooled	38° 42′	4.5	1° 05′	1.45	40° 22′	2.35
		44° 48′	7.15	1° 00′	1.35	47° 50′	1.82
18	Overaged	38° 48′	7.65	1° 03′	1.50	40° 18′	2.05
		44° 59′	7.7	1° 02′	1.40	47° 54′	1.54
19	Overheated	38° 38′	8.05	0° 55′	1.30	40° 12′	1.72
		44° 43′	8.46	1° 00′	1.20	47° 45′	1.27

considerable variation in the curves. Note also the variation in the width of the peak radiation bands produced by the three structures. These same type variations are also characteristic in the following steel specimens, with some slight variations probably caused by the effect of the alloying elements.

The diffraction patterns and the corresponding microstructures for the various heat-treated specimens of AMS 6250 (SAE 3312) carburizing steel are shown in figs. 9 to 13. The original hot-rolled bar stock specimen shows the characteristic ferritic curve—a narrow intense line at 57° 10′ (see fig. 9). The carburized and furnace cooled specimen, fig. 10, shows a less intense line at 57° 05′ and considerable minor radiation near the background. The minor plateaus near the base of this line may indicate the presence of some martensite and carbides. The carburized and annealed specimen, fig. 11, shows the presence of slightly more ferrite with the peak line at 57° 10′ probably due to an increase in the amount of pearlite formed during annealing. The oil-quenched specimen shows the broad low curve characteristic of the martensitic structure with the peak at approximately 56° 40′ (fig. 12). The presence of austenite is indicated by the slight bulge at the left of the peak. The quenched and tempered specimen definitely shows the presence of austenite as a peak at 55° 40′, a shift from the quenched martensitic line to the tempered martensitic line at 57° 00′, and the ferritic line evident as a slight bulge at 57° 10′, see fig. 13. It should be noted that the specimens were examined on the surface which had been polished and electrolytically etched and represent an area parallel to the original surface at a depth of approximately 0.001 to 0.002 in.

To determine the effect of shot peening an oil-hardened steel, specimens of quenched and tempered AMS 6412 (SAE X4340) steel were prepared and examined. One specimen was examined in the heat-treated condi-

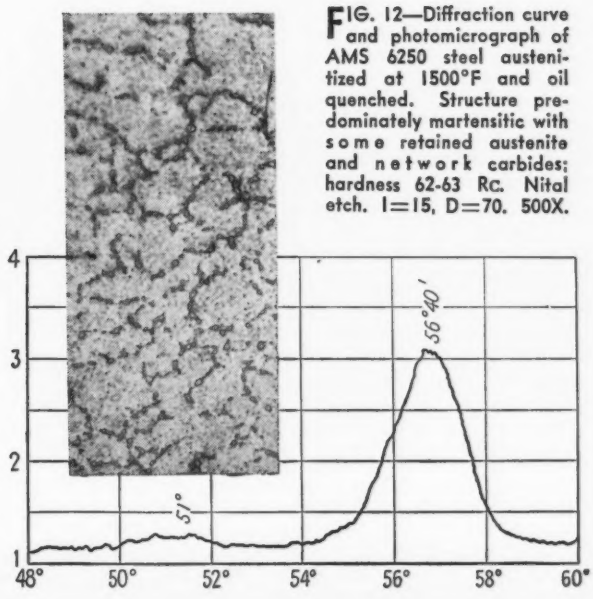


FIG. 12—Diffraction curve and photomicrograph of AMS 6250 steel austenitized at 1500°F and oil quenched. Structure predominately martensitic with some retained austenite and network carbides; hardness 62-63 Rc. Nital etch. I=15, D=70. 500X.

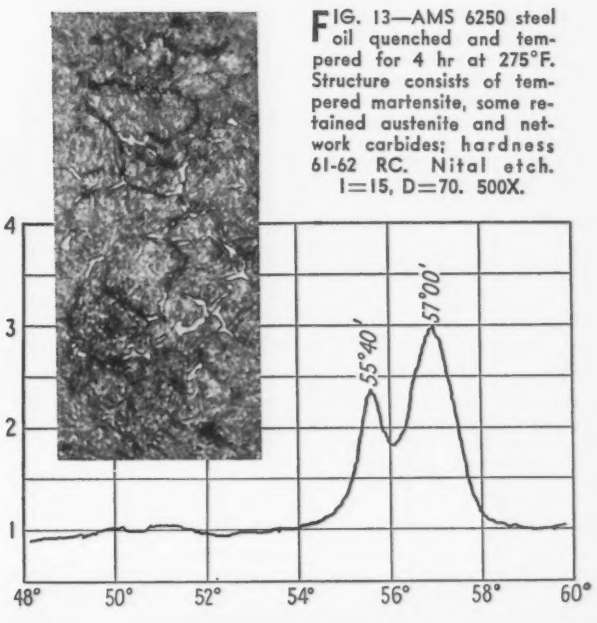


FIG. 13—AMS 6250 steel oil quenched and tempered for 4 hr at 275°F. Structure consists of tempered martensite, some retained austenite and network carbides; hardness 61-62 RC. Nital etch. I=15, D=70. 500X.

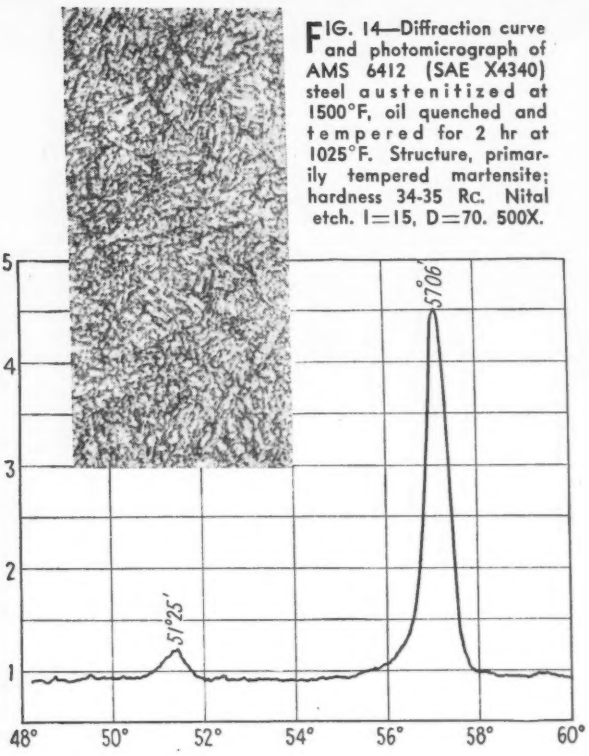


FIG. 14—Diffraction curve and photomicrograph of AMS 6412 (SAE X4340) steel austenitized at 1500°F, oil quenched and tempered for 2 hr at 1025°F. Structure, primarily tempered martensite; hardness 34-35 Rc. Nital etch. I=15, D=70. 500X.

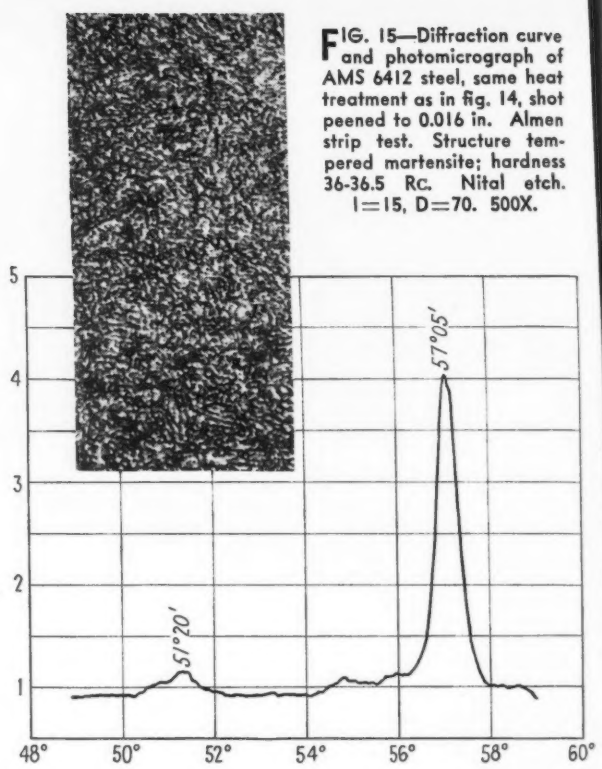
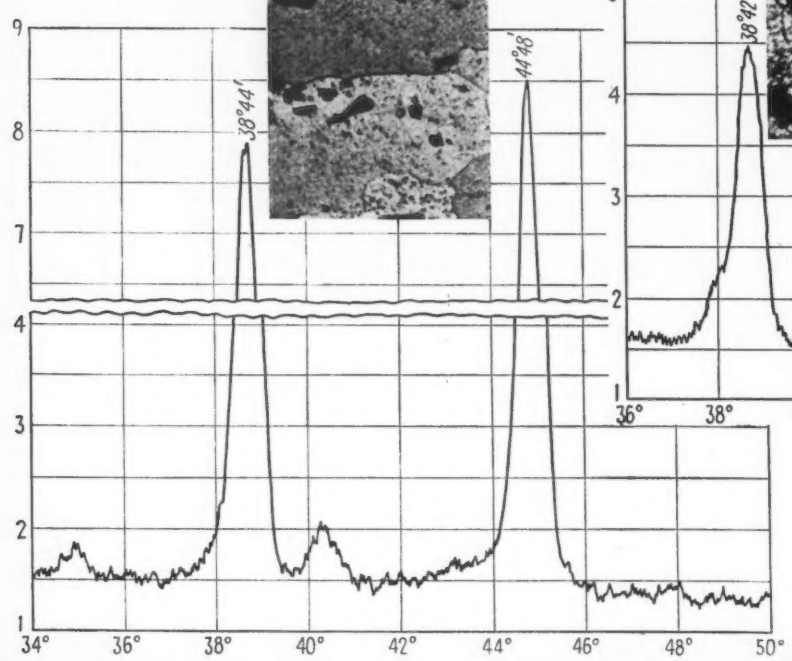
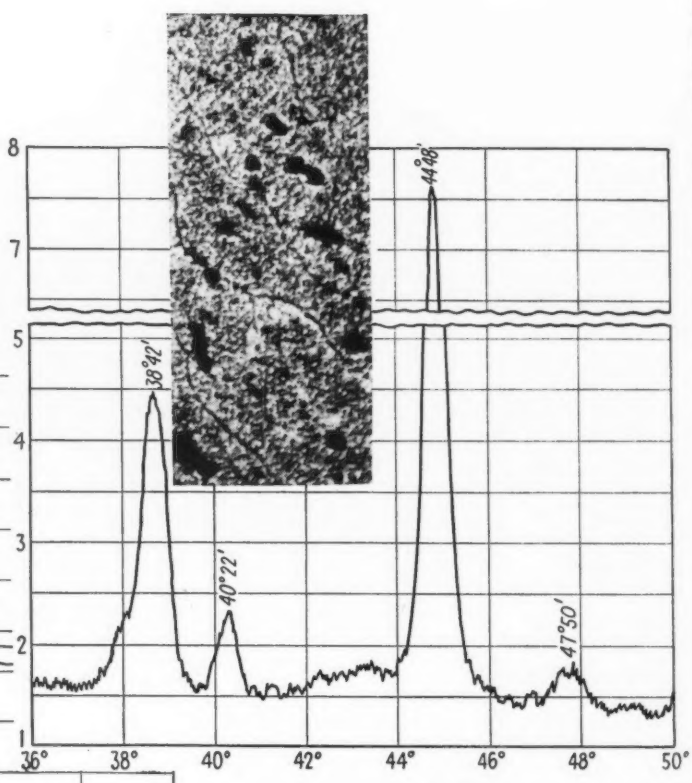


FIG. 15—Diffraction curve and photomicrograph of AMS 6412 steel, same heat treatment as in fig. 14, shot peened to 0.016 in. Almen strip test. Structure tempered martensite; hardness 36-36.5 Rc. Nital etch. I=15, D=70. 500X.

BELOW

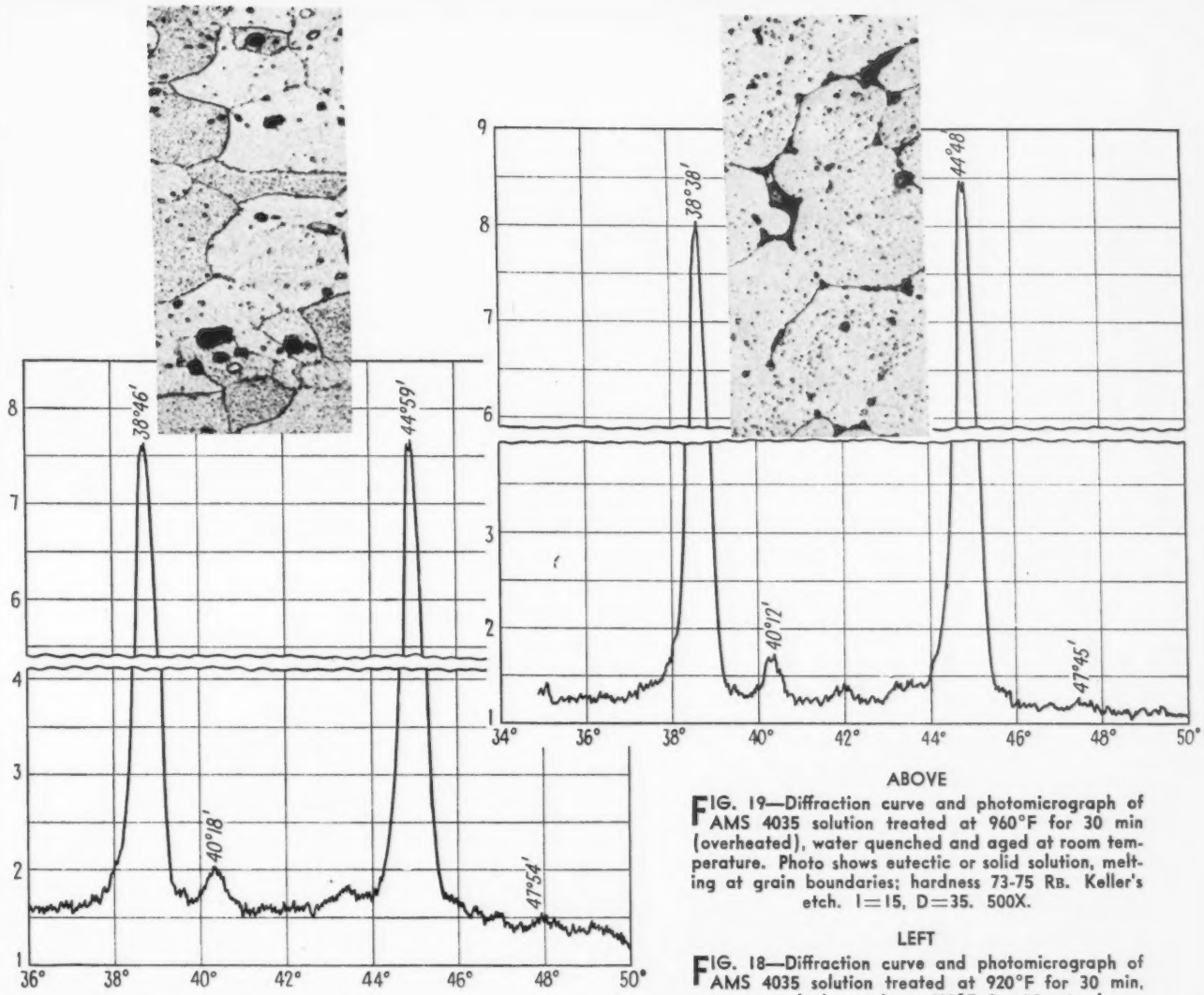
FIG. 16 — Diffraction curve and photomicrograph of AMS 4035 aluminum alloy (24S) solution treated at 920°F for 30 min, water quenched and aged at room temperature. Structure shows high grain contrast; hardness 82-84 Rb. Keller's etch. I=25, D=35. 500X.





ABOVE

FIG. 17—Diffraction curve and photomicrograph of AMS 4035 solution treated at 920°F and 30 min, air cooled and aged at room temperature. Photo shows excessive intragranular precipitation and lack of grain contrast; hardness 75-76 Rb. Keller's etch. I=25, D=35. 500X.



ABOVE

FIG. 19—Diffraction curve and photomicrograph of AMS 4035 solution treated at 960°F for 30 min (overheated), water quenched and aged at room temperature. Photo shows eutectic or solid solution, melting at grain boundaries; hardness 73-75 RB. Keller's etch. I=15, D=35. 500X.

LEFT

FIG. 18—Diffraction curve and photomicrograph of AMS 4035 solution treated at 920°F for 30 min, water quenched, aged at 400°F for 30 min (overaged), air cooled. Photo shows decreased grain contrast and increased grain boundary precipitate, as compared with fig. 16; hardness 90-92 RB. Keller's etch. I = 25, D = 35. 500X.

tion without peening, and another specimen was peened to an intensity of 0.016 in. (Almen strip test). The resulting cold working was not evident in the diffraction curve nor in the photomicrograph (figs. 14 and 15, respectively) except for a very slight decrease in the diffraction angle of the peak line and a slight broadening of the left side of the peak line curve. This change is within the mechanical variation of the recorder so it may not be significant, although the variation is evident in both shot-peened specimens. The literature reports that the effect of cold working may be determined by the use of low angle scatter diffraction equipment.

Examination of several aluminum alloy specimens (24S) was made to determine the diffraction patterns for the various heat-treated structures. The aluminum specimens were examined using copper radiation (Cu,Kα) instead of the iron radiation used for the steel specimens. The recorder intensity control was set at 25 and the damping control at 35. The specimen, which had received the normal solution and aging treatment, produced a diffraction curve with two major peaks at 38° 44′ and 44° 48′ with intensities of 7.9 and 8.5 respectively (fig. 16). Slow cooling of the specimen from the solution temperature produced peak line intensities of 4.5 and 7.1 at the same angles, indicating a change in the precipitated constituent which produces the hardening effect in this alloy (fig. 17). The corresponding hardnesses of these specimens were 83 and 75 RB respectively. The overaged specimen showed slight decreases in the peak line intensities (as compared to the normal structure) to 7.65 and 7.7 respectively and a shift in the 44° 48′ line to 44° 59′, with a hardness of 91 RB, fig. 18. The overheated specimen, with a hardness of 74 RB showed great increases in the intensities of the peak lines to 9.7 and approximately 11.0, respectively, and a shift of the 37° 44′ line to 37° 37′. The 44° 48′ line was too intense to record on the chart paper at the recorder intensity setting used. In order to show the true relationship between the two peak lines, the recorder intensity setting was decreased to 15 and another curve of the overheated specimen was made, which showed the relative intensities of the peak lines to be 8.05 and 8.45 respectively (see fig. 19).

10,000 Trade Names

. . . The eighth section of the Trade Name Directory, compiled by THE IRON AGE as a ready reference for engineers and business executives, is presented herewith. Previous sections of this directory appeared in the issues of Jan. 2, p. 172; Jan. 9, p. 65; Jan. 16, p. 64; Jan. 23, p. 63; Jan. 30, p. 60; Feb. 6, p. 69; Feb. 13, p. 66. This directory tells what a trade name covers, its composition if a material, where or how it is used and the full address of the manufacturer or supplier.

— S —

(Continued)

Silectron: Grain-oriented silicon steel. High permeability and very low losses. Allegheny-Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22.

Silent Hoist: Winches, capstans, car pullers, barge movers, truck cranes and equipment. Silent Hoist & Crane Co., 841 63rd St., Brooklyn 20.

Sil-Fos: Brazing alloy with low silver content; joins copper, brass, bronze. Handy & Harman, 82 Fulton St., New York 7.

Silfram: Corrosion and wear resisting Fe-Ni-Cr alloy for hard-facing welding rods. Stoody Co., Whittier, Calif.

Silicones: Fluids, varnishes, resins, greases of great molecular stability, high temperature, resistance, water repellent, chemically inert and electrically nonconducting. Dow Corning Corp., Midland, Mich.

Silimex: Firebrick. Mexico Refractories Co., Mexico, Mo.

Silimite: Boiler feedwater treatment for removal of silica. Allis-Chalmers Mfg. Co., Milwaukee 1.

Silisol: For dissolving silica scale. Turco Products, Inc., Los Angeles 54.

Sillertec: Synthetic enamels in all colors for metal specialties and industrial equipment. Sillers Paint & Varnish Co., Inc., 831 E. 61st St., Los Angeles 1.

Sillimanite: Refractories for metal-melting furnaces. Chas. Taylor Sons Co., Cincinnati.

Sillux: Automobile synthetic enamels. Sillers Paint & Varnish Co., Inc., 831 E. 61st St., Los Angeles 1.

Silmanal: 86.5 pct Ag, 8.8 Mn and 4.7 Al permanent-magnet alloy. Arnold Engineering Co., 147 E. Ontario St., Chicago 11.

Silmanal: Permanent-magnet alloy of Ag, Mn and Al. Unusual magnetic properties and capable of cold work into strip, rod, etc. General Electric Co., Schenectady 5.

Silimite: Boiler feedwater treatment for removal of silica. Allis-Chalmers Mfg. Co., Milwaukee 1.

Silmo: Si-Mo steel for high temperature tubing. Timken Steel & Tube Co., Canton, Ohio.

Sil-O-Cel: Insulating-refractory concrete for temperatures up to 1800°F. Johns-Manville, 22 E. 40th St., New York.

Silumin: Aluminum-silicon alloys for automotive castings, bulkheads, steam or gas cylinders. Metallgesellschaft, A. G., Frankfurt, Germany; American Lurgi Corp., 120 Broadway, New York.

Silvaloy: Flux for low-temperature bronze-welding and brazing, and for silver-soldering. Linde Air Products Co., 30 E. 42nd St., New York 17.

Silvanite: Tungsten-chrome tool steel for wood working knives. Columbia Tool Steel Co., Chicago Heights, Ill.

Silvaz: Alloy of silicon, vanadium, zirconium, and boron used for improving hardenability, ductility, and impact resistance of steels. Electro Metallurgical Co., 30 E. 42nd St., New York 17.

Silverbond: Stainless-clad steel for structural applications. Jessop Steel Co., Washington, Pa.

Silver Chisel: Tough, shock resisting complex Fe welding electrode for chisels. American Agile Corp., 5806 Hough, Cleveland.

Silver Finish Hardening: Bright hardening (or annealing, normalizing, or tempering) of all steels except high speed and low-carbon carburizing steels. Perfection Tool & Metal Heat Treating Co., 1740 W. Hubbard St., Chicago 22.

Silver Fluoborate: A high-speed acid silver electroplating solution. General Chemical Co., 40 Rector St., New York 6.

Silver Fox: Series of stainless irons and steels for valves, surgical instruments, cutlery, chemical apparatus. Samuel Fox & Co., Ltd., Sheffield, England.

Silver Laminates: Silver laminated to base metals to replace copper in electrical applicating where both corrosion resistance and rigidity are required. General Plate Div., 36 Forest St., Attleboro, Mass.

Silverin Blancadur: Corrosion-resistant high-nickel copper alloy with Mn-Fe, similar to Monel for chemical apparatus and table ware. Vereinigte Deutsche Nickelwerke, A. G. Schwerte, Ruhr, Germany.

Silverine: 80 Cu, 16 Ni alloy with Zn-Sn-Co-Fe for ornamental and sanitary fittings. J. Stone & Co., Deptford, London, England.

Silverlink: Roller chains and sprockets. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Silver Magnet Alloy: High coercive force Ag alloy for permanent magnets. General Electric Co., Schenectady.

Silveroc: Hammer board made up of rock maple coated with a silver treatment highly resistant to moisture change. Irwin Mfg. Co., Inc., Garland, Pa.

Silveroid: Corrosion-resisting copper-nickel-manganese alloy for cutlery. Henry Wiggin & Co., Ltd., Birmingham, England.

Silver Red: High-speed steel with 6 W, 0.8 B for welding high-speed steel tools. American Agile Corp., 5806 Hough, Cleveland.

Silver Star: High-carbon spring wire for upholstery bed springs, mattresses, and cushion springs. Bethlehem Steel Co., Bethlehem.

Silverseal: Sheet packing material consisting of asbestos covered wire reinforced with a wire mesh and treated with a heat-resistant compound. Goetze Gasket & Packing Co., Inc., New Brunswick, N. J.

Silver Steel: Hacksaw, band saw and circular saw blades; files. E. C. Atkins & Co., 402 S. Illinois St., Indianapolis 9.

Silverstitchers: Motor-driven equipment in standard and special types for stitching fiber and corrugated containers, stapling wire. Acme Steel Co., 2840 Archer Ave., Chicago 8.

Silverstreak: Silent chain drives. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Silverthread: Steel take-ups. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Silver Tip: Steel containing Mn and S for screw-machine parts. La Salle Steel Co., 919 N. Michigan Ave., Chicago.

Silvery: See Jisco.

Silvery Mayari: High-silicon alloy pig iron made directly from nickel-chromium bearing ore, used in the production of quality castings. Bethlehem Steel Co., Bethlehem.

Sil-X: Exothermic ferrosilicon in briquet or granular form for open hearth or ladle use.

Chromium Mining & Smelting Corp., Ltd., Sault Ste. Marie, Ontario, Canada.

Sil-X: Exothermic ferrosilicon, granular and briquets, for adding ferrosilicon in molten condition in furnace or ladle. Chromium Mining and Smelting Corp., Ltd., Sault Ste. Marie, Ontario.

Simanal: Deoxidizer for molten iron and steel; contains 20 pct Si, 20 pct Mn, 20 pct Al, balance mainly iron. Ohio Ferro-Alloys Corp., 104 Citizens Bldg., Canton 2, Ohio.

Simbrax: Corrosion-resistant copper alloy for pressure gages. Jas. Booth & Co., Ltd., Birmingham, England.

Simonds Green Streak: Al-Ni-Co for permanent magnets. Simonds Saw & Steel Co., 11 Park Place, Lockport, N. Y.

Simplex: Carburizing steel with 1.2 Ni, 0.6 Cr; for gears, pinions, shafts. Crucible Steel Co. of America, Chrysler Bldg., New York.

Simplex Forging: Nickel-chrome steel for gears, and high-strength machine parts. Crucible Steel Co. of America, 1100 Chrysler Bldg., New York.

Simplimatic: Versatile automatic lathes. Gisholt Machine Co., 1215 E. Washington Ave., Madison 3, Wis.

Sinker: Cement coated nails. American Steel & Wire Co., Cleveland 13.

Sinimax: Nickel-silicon core material, high permeability at low densities, very low core losses, for moderately low densities and high frequencies. Allegheny-Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22.

Sinta-Sett: Industrial diamonds set in tungsten carbide matrix; core bits for rotary drilling equipment. Carboloy Co., Inc., 11109 E. 8 Mile Dr., Detroit 32.

Sinteel: Ferrous and nonferrous parts of high density pressed from metal powders. American Electro Metal Corp., 320 Yonkers Ave., Yonkers 2, N. Y.

Sinteel-G: Ferrous and copper powders molded into products which are hardenable (Rc 60) and self brazing. American Electro Metal Corp., Yonkers 2, N. Y.

Sinterloy: Sintered iron alloy containing from 0.15 to 0.80 C for gears, cams, washers. Charles Hardy & Co., 420 Lexington Ave., New York.

Sinterloy: Steel-like powder of variable carbon content for manufacture of machine parts, small hardware, etc. Chas. Hardy, Inc., 424 Lexington Ave., New York.

Sioux Super Cast Rings: Complex alloy steel for valve seat inserts, rings. Albertson & Co., Sioux City, Iowa.

Sirfiding: Black coating produced on steel by sodium hydroxide-sulphur solutions; similar to Ebenol, Jetal, etc. Producer unknown.

Sironze: Corrosion-resistant bronze for bolts, nuts, screws. Wilbur B. Driver Co., Newark, N. J.

Sirvene: Mechanical elastomer (rubber-like substance) with high resistance to aging oils, high temperature, and sunlight. Chicago Rawhide Mfg. Co., 1303 Elston Ave., Chicago 22.

Sirvis: Mechanical leather products. Chicago Rawhide Mfg. Co., 1303 Elston Ave., Chicago 22.

Sisalin Sections: Buffing products. Hanson-Van Winkle-Munning Co., Matawan, N. J.

Situft: Power brushes for deburring, scale removal, thread cleaning, etc., from hard-to-reach places. Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland.

Situft: Side-tufted wire brush for use on portable tools; particularly adapted to internal cleaning and finishing or the brushing of external irregular contours or hard-to-reach places. Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland 14.

• In order to assure the accuracy and completeness of this directory, manufacturers and suppliers serving the metalworking industry are requested to check the trade names appearing in this and succeeding issues and to advise THE IRON AGE of any omissions or errors. These changes will be incorporated in the first reprint made for general distribution. Communications should be addressed to THE IRON AGE, 100 E. 42nd St., New York 17. Attention Trade Name Directory.

Sivyer: See Nuloy.

Sivyer: Complete series of stainless steels for general applications and furnace parts, oil refinery pump valves. Sivyer Steel Casting Co., 1675 S. 43rd St., Milwaukee, Wis.

Sivyer: Series of steels and alloy steels with Cr-Mn-Ni-Si and V for tools, castings, gears, shafts. Sivyer Steel Casting Co., 1677 S. 43rd St., Milwaukee.

600 Bearing Metal: High-strength, nonferrous alloy with bearing metal properties. Mueller Brass Co., Port Huron, Mich.

695 Plastic: See Ramset.

Skefko: High-carbon, Cr-Mn and Cr-Mo steels for ball bearings. Hofors Steel Works, Hofors, Sweden; S. K. F. Steels, Inc., Graybar Bldg., New York.

S K F Steel: Wear-resistant alloy steels with Mn-Si-Cr or Mo, V; for ball bearings, trimming and stamping dies, drills, gages. S. K. F. Steels, Inc., Front & Erie Ave., Philadelphia; Bofors Steel Works, Bofors, Sweden.

Skilsaw: Portable electric tools. Skilsaw, Inc., Chicago 30.

Skinner: All types of unit heaters used for heating open spaced industrial type buildings where steam or hot water is available as the heating medium. St. Louis Blow Pipe & Heater Co., Inc., 1948 N. Ninth St., St. Louis.

Skullgard: Protective hats and caps. Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh.

Sky Lift: Hydraulic lift electric fork truck. Automatic Transportation Co., 149 W. 87th St., Chicago 20.

S-L: Oil for breaking in of new bearings. Grapho-Metal Packing Co., Indianapolis 5.

Slip: Non-inflammable remover for zinc chromate primer. Turco Products, Inc., Los Angeles 54.

Slocrode: Cast iron with high C, Ni, Cr for castings for high-duty purposes. Sheepbridge Stokes Centrifugal Castings Co., Ltd., Chesterfield, England.

Smena: Hard wear and corrosion-resistant alloy for resurfacing. Central Institute of Metals, Leningrad, Russia.

Smith No. 10: High chrome-aluminum iron alloy for electrical resistors and heating elements. A. O. Smith Co., 3533 N. 27th St., Milwaukee.

Smoothare: Welding rods for mild steel. Harnischfeger Corp., Milwaukee.

Smooth-Flow: Method of fabricating welded steel and alloy fittings to assure smooth flow of material through the fittings, thereby decreasing corrosive action. Youngstown Welding & Engineering Co., 3700 Oakwood Ave., Youngstown 9.

Smoothole: Eutectic steel for hollow mining drills. Midvale Co., Nicetown, Philadelphia.

Smooth-Run: Abrasive belts, sleeves and bands. Clover Mfg. Co., Norwalk, Conn.

S Monel: Silicon-bearing form of Monel possessing high hardness, with excellent gall-resisting properties. International Nickel Co., Inc., 67 Wall St., New York 5.

"S" Monel: Ni-Cu-Si alloy for non-galling valve seats, disks and bushings for high-temperature steam. International Nickel Co., 67 Wall St., New York.

SM Ferrochrome: Alloy for use in making ladle additions of chromium to steel or cast iron. Electro Metallurgical Co., 30 E. 42nd St., New York 17.

Smithway: Welding machines and electrodes. A. O. Smith Corp., 155 E. 44th St., New York 17.

S. M. Z.: Si-Mn-Zr graphitizing alloy for white cast iron. Electro-Metallurgical Co., 80 E. 42nd St., New York.

SMZ Alloy: Alloy of silicon, manganese, and zirconium used as a ladle addition for improving the physical properties of cast iron. Electro-Metallurgical Co., 80 E. 42nd St., New York 17.

Snap-Lock: Limit, motor starter and push button switches. National Acme Co., 170 E. 131st St., Cleveland 8.

S.N.C.G.: Shock-resistant Fe alloy for gears. Industrial Steels Ltd., Sheffield, England.

Snogard: Metal fence posts. American Steel & Wire Co., Cleveland 13.

Soderglue: Commutator lubricants, soldering flux, paste, salts, stick, liquid oil, tinning sticks, soldering sets. L. B. Allen Co., Inc., 6759 Bryn Mawr Ave., Chicago.

Sodium Cyanide: White solid fused in 1-oz. eggs and in granular form; for heat treating steel; in electroplating; in cleaning of metal, including neutralizing after pickling; and in the extraction of gold, silver, zinc and lead from ores. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.

Sofiron: Shielded-arc, covered, cast-iron electrode for electric welding of iron castings. William M. Orr Co., 1228 Brighton Rd., Pittsburgh 12.

Softweld: Welding rod on cast iron. Lincoln Electric Co., 12818 Coit Rd., Cleveland.

Softweld: Arc-welding electrode for repairing cast iron where weld must be machinable. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Sol-A-Die: Method of making dies used in the forming of sheet metals by stages. Solar Aircraft Co., San Diego 12.

Sol-A-Nut: Stainless steel lock-nut especially adapted to high-temperature installations. Solar Aircraft Co., San Diego 12.

Solar Flux: Welding flux for use with chromium-nickel alloys. Solar Aircraft Co., San Diego 12.

Solar: Enamels in various colors, air dry or bake, for metal specialties and industrial equipment. Solar Corp., 100 W. Bruce St., Milwaukee 4.

Soldaloy: Two types of Cu alloy for soldering iron tips. P. R. Mallory Co., Inc., Indianapolis.

Solderprep: Soldering flux for ferrous metal, brass and zinc coated surfaces. Neilson Chemical Co., 6564 Benson St., Detroit 7.

Solderux Cream: Flux for soldering large masses that must be kept hot for a long time. Mico Instrument Co., 14 Arrow St., Cambridge, Mass.

Solflux: Transparent fluid, diluted with water for tinning copper, soldering brass, zinc, tin and galvanized iron. United Industrial Products, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.

Sol-Speedi-Dri: Dry granular materials spread on floors to absorb oil, grease, syrup, chemicals, etc., and to make floors anti-skid. Waverly Petroleum Products Co., Drexel Bldg., Independence Sq., Philadelphia 6.

Solvent No. 3: Liquid chemical stripping which, when added to hot caustic solutions speeds the stripping of paints, lacquers and enamels, particularly high-bake enamels. American Chemical Paint Co., Ambler, Pa.

Solvent Nos. 26 and 26A: For cleaning metals. Cities Service Oil Cos., 70 Pine St., New York 5.

Solvenol: Solvent for finishes that are force-dried or baked, such as wire enamels. Hercules Powder Co., Wilmington, Del.

Solvol: High-lubricity water-mix cutting fluid for metal-cutting. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Sondermessinge: Brasses for general construction. Eisenwerk Neubrandenburg, G.m.b.H., Berlin 20, Germany.

Sonneborn's: Machine and engine enamels in various colors. L. Sonneborn Sons, Inc., 88 Lexington Ave., New York.

Sormite: Wear and corrosion-resistant Cr-Si-Mn-Ni iron alloy for hard-facing applications. Central Institute of Metals, Leningrad, Russia.

Spallac: Firebrick. Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis 1.

Spang Pipe: Seamless and welded steel pipes. Spang-Chalfant Div., Grand Bldg., Pittsburgh 30.

Sparkaloy: Si-Mn-Ni wear-resistant alloy for spark plugs. Wilbur B. Driver Co., Newark, N. J.

Spark-Stop: Rectangular mesh screens for locomotive front and netting. John A. Roebling's Sons Co., Trenton 2, N. J.

Spatter-Ex: Water-soluble compound for preventing adhesion of welding spatter to metal parts. Wayne Chemical Products Co., Detroit 17.

Spauldo: Fibre material in sheets and rolls, for machining or stamping into parts. Spaulding Fibre Co., Inc., Tonawanda, N. Y.

Spaudling Armite: Hard vulcanized fiber material in sheets and rolls for stamping or forming into parts. Spaulding Fibre Co., Inc., Tonawanda, N. Y.

Spearseg: Metal-cutting segmental saws. Spear & Jackson, Ltd., Sheffield, England.

Spearweld: Welding powder for tipping high-speed tools. Spear & Jackson, Ltd., Sheffield, England.

Specialbronze: Bronze for use in the electrical industries. Eisenwerk Neubrandenburg, G.m.b.H., Berlin 20, Germany.

Specialime: Lime polishing composition. Hanson-Van Winkle-Munning Co., Matawan, N.J.

Special Motor: Low-carbon steel for rotating equipment, motors. Follansbee Bros. Co., Follansbee, W. Va.

Special Power: Low-carbon steel with 4 Si, for power and radio transformers. Follansbee Bros. Co., Follansbee, W. Va.

Specti-Goggle: Complete line of lens combinations of spectacle type goggles for industrial use. Eastern Equipment Co., Inc., Willow Grove, Pa.

Spectifier: Visual inspection devices for machine parts. Eastern Machine Screw Corp., Truman and Barclay Sts., New Haven 6, Conn.

Spedex: Free-machining nickel silver for keys, electroplaters, gas meters, carburetors, screws. Barker & Allen Ltd., Birmingham, England.

Speedaire: Fan-cooled worm-gear speed reducer. Cleveland Worm & Gear Co., 3272 East 80th St., Cleveland 4.

Speed Case: Low carbon free machinability, with physical characteristics and carburizing qualities of low-carbon openhearth steels. Brown-Wales Co., 493 C St., Boston 10.

Speed Case: Low-carbon openhearth steel which machines at 250 to 300 sfpm; carburizes with case of 62 to 64 Rc. Monarch Steel Co., 543 W. McCarty St., Indianapolis 7.

Speed Case: Fast machining openhearth steel plates, excellent carburizing properties, finish and extended tool life. W. J. Holliday & Co., Hammond, Ind.

Speed-Changer: Vari-pitch variable speed transmission. Allis-Chalmers Mfg. Co., Milwaukee 1.

Speeder: Shovels, cranes, draglines, pull shovels, pile drivers, truck cranes, trailers. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Speedial: Handwheel indicator buffing and polishing machines for instantly obtaining and recording spindle speeds. Standard Electrical Tool Co., 2505 River Rd., Cincinnati 4.

Speedkut: Cutting oils. D. A. Stuart Oil Co., 2733 S. Troy St., Chicago.

Speed Nuts: Locking nuts. Tinnerman Products, Inc., 2126 Fulton Rd., Cleveland 13.

Speed Nuts: Self-locking nuts fabricated from sheet spring steel, with two prongs sheared and formed to securely grip threaded members brought into engagement with the nut. Tinnerman Products, Inc., 2040 Fulton Rd., Cleveland 13.

Speedomax: Recording equipment. Leeds & Northrup Co., 4945 Stenton Ave., Philadelphia 46.

Speedrex: Chemical and weather-resistant enamel paints in various colors. Truscon Laboratories, Inc., Caniff & G. T. R., Detroit.

Speed Rod: Arcwelding electrode for steel; corresponds to AWS E-4520. Champion Rivet Co., Harvard Ave. & E. 108th St., Cleveland 5.

Speed-Set: Product control for gyratory crushers. Allis-Chalmers Mfg. Co., Milwaukee 1.

Speed Treat: Same as Speed Case, except carbon content is higher. Brown-Wales Co., 493 C St., Boston 10.

Speed Treat: Fast machining medium-carbon steel plates; excellent finish and uniformity of heat-treating response. W. J. Holliday & Co., Hammond, Ind.

Speed Treat: Medium high-carbon openhearth steel which machines at 155 to 170 sfpm; responds to flame induction or regular heat treating with 58 to 60 Rc hardness. Monarch Steel Co., 543 W. McCarthy St., Indianapolis 7.

Speed Case: Steel which machines at 300 sfpm, carburizes fast with little warpage, with physical properties equal to average low-carbon openhearth steels. Monarch Steel Co., 545 W. McCarthy Ave., Indianapolis 7; W. J. Holliday & Co., 137 Polk Blvd., Hammond, Ind.; Fitzsimons Co., 1633 Wilson Ave., Youngstown 8, Ohio.

Speedi-Dri: Dry granular materials spread on floors to absorb oil, grease, syrup, chemicals, etc., and to make floors anti-skid. Waverly Petroleum Products Co., Drexel Bldg., Independence Sq., Philadelphia 6.

Speedkut: Pre-mixed cutting oils blended in various proportions for metal-cutting operations. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Speed-Treat: High- and medium-carbon openhearth steels with special heat-treating and machining characteristics. Monarch Steel Co., 545 W. McCarthy Ave., Indianapolis 7, Ind.; Holliday & Co., 137 Polk Blvd., Hammond, Ind.; Fitzsimons Co., 1623 Wilson Ave., Youngstown 8, Ohio.

Speedweigh: Predetermined weight scale. Toledo Scale Co., Toledo.

Speer: Carbon, electrographite and metal-graphite materials in plates, bars, rods, for further machining. Speer Carbon Co., St. Marys, Pa.

Sphinx: Adhesives for attaching labels to metals. Arabol Mfg. Co., 110 E. 42nd St., New York 17.

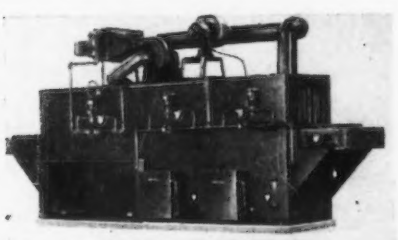
(Continued on Page 131)

New Equipment . . .

Cleaning and Finishing

Recent developments in spray type washing machines, dip tanks, polishing and buffing units and spray guns are among the cleaning and finishing equipment discussed in this review. Materials such as rust preventives, abrasives, emulsifiable solvents and cleaning compounds are also described.

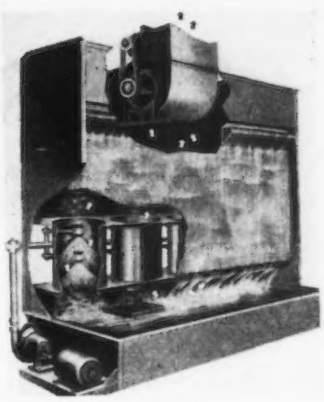
1 Adaptable for cleaning and similar spray operations, as well as for drying, a flat conveyor type, spray washing machine has been announced by *Optimus Equipment Co.*, 137 Church St., Matawan, N. J. The machine is said to rapidly spray any parts which may be



handled either in baskets, on racks, or laid on the conveyor. Special parts can be positioned if necessary, and little labor is required for loading or servicing. Alkaline, acid, solvent type, air drying, oil spray, and similar operations can be handled and any type of heating can be employed. The machine is available in all sizes with any variety of horizontal conveyor. It features a long horizontal tunnel placed on top of a series of solution tanks. A continuous flat conveyor runs the length of the tunnel, carrying parts through a series of operations. Solutions are forced on the parts through a battery of spray nozzles.

Water Tube Spray Booth

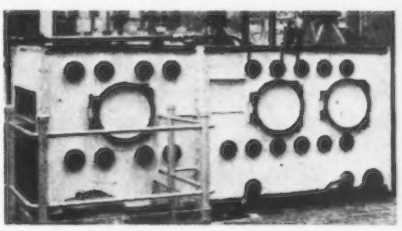
2 The water tube spray booth, announced by *Newcomb-Detroit Co.*, 5741 Russell St., Detroit 11, is a water curtain type booth incorporating the use of a series of tubes to clean the paint-laden air. Inside each tube are two high velocity, clog-proof nozzles which wash the air twice. The air is then drawn by suction through moisture separators and discharged. The discharge fan is built-in eliminating the necessity for overhead construction and thus permitting easy movement of the entire unit when necessary. The water recirculating pump and motor are mounted directly to the tank making an integral unit. The complete unit is delivered 90 pct preassembled; only the spray area enclosure and the stack are in "knock-down" condition. Available in five sizes, 5000, 7500, 10,000, 12,500 and 15,000 cfm, these units



may be used individually or in combination and for unit or production line paint spraying.

Spray Type Machine

3 For continuous pickling and washing of any metal part requiring surface preparation for the application of enamel or other coatings or for the removal of scale, a spray type machine has been announced by the Industrial Products Sales Div., *B. F. Goodrich Co.*, Akron, Ohio. Pieces are fed onto a conveyor at the entrance to the machine and carried through the spraying and washing cycles, emerging acid free, it is reported, and ready for the succeeding operations. Each unit is designed individually to suit the particular manufacturing problem and is

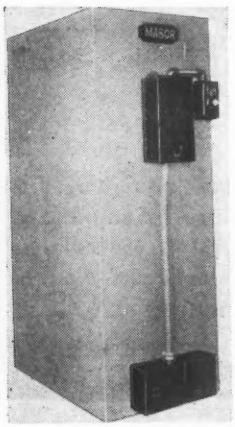


lined with rubber by the vulcalock process of adhering rubber to metal. Advantages cited for the machine are straight line operation, standardized production, reduction in pickling time to 4 min and flexibility of operation.

Vapor Degreaser

4 Equipped with controlled cool air, an improved vapor degreaser has been developed by the *Mabor Co.*, Clark Township, Rahway, N. J. The equipment, requiring only a plug into power to start its operation, is equipped with heavy duty casters, making it a portable unit for problems in any section of the plant. The degreaser is selfdistilling and completely self-contained, eliminating the need for an outside vessel or barrel. Built-in storage tanks are provided as part of the unit. Its contents can be distilled entirely without danger of overheating, it is said, because the machine is equipped with the Mabor jacket heating system. By increasing the flow of cooling air, vapor level oscillation is substantially reduced, resulting in a proportionately lessened consumption

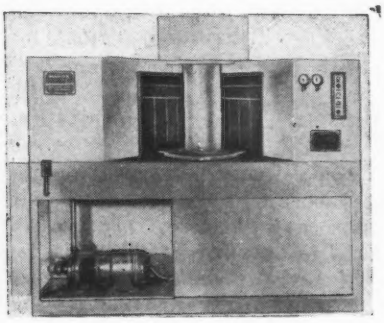
of solvent, it is said. The degreaser is efficient even on light metals, it is reported, as a hand hose and flush pump supplied with the ma-



chine take care of lighter gages which do not condense enough solvent vapor for effective cleaning.

Turn-Table Washer

5 Production of a turn-table type washer, which both rinses and dries average sized parts in baskets, trays, or individually, has been announced by the *Mabor Co.*, Clark Township, Rahway, N. J. This unit requires only one operator to load and unload the parts for cleaning, and in addition is self-contained and compact requiring little floor space in which to achieve its production rate which averages 60 baskets per hr. Basket dimensions are 12 x 12 in., 16 x 16 in., or 20 x 20 in. with load capacity of 1800, 2500 or 3000 lb. Three standard sizes of washers are available



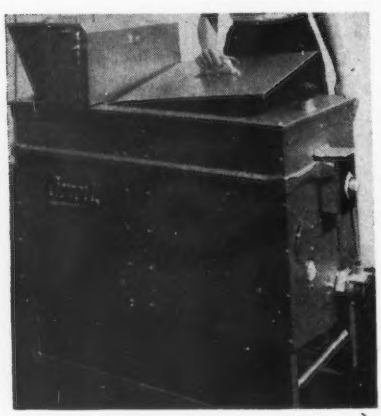
and may also be had with special modifications for difficult and unusual problems, where centering of parts is essential. They may be heated by steam, gas, oil or electricity.

Pickling Process

6 Announcement of a new process for pickling aluminum and aluminum alloys by using Troxide-E has been made by the *Waverly Petroleum Products Co.*, Drexel Bldg., Philadelphia 6. A solution made up with Troxide-E is said to be entirely safe, yet produces bright, clean metal surfaces. It is claimed that a Troxide solution in some instances obtained a surface so clean that the buffing operation was speeded up three times.

Hot Dip Tanks

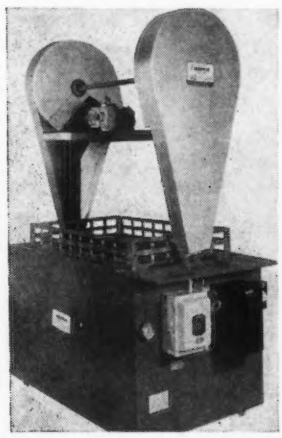
7 Two models, one with explosion fittings for compounds of high vapor transmission, have been released for plastic skin protective coating dipping operations by *Aeroil Products Co.*, 5701 Park Ave., West New York, N. J. The models feature air-turbine mechanical agitation and automatically activated water cooling system. Provision is



made for rapid cooling of melt when necessary, enabling the user to swiftly change the viscosity of skin coating. Indirect heating by means of an agitated hot oil bath that is thermostatically controlled at temperatures from 100° to 550°F is another construction feature. The tanks, known as Plat-O-Dip tanks No. 5 and No. 5E, have enlarged premelt section and feeding hopper in selfcontained unit to insure uninterrrupted production. Visible check of oil bath temperatures is possible with built-in dial thermometer and thermostat with knob dials and pilot lights.

Motorized Tank

8 Designed for automatic washing and cleaning of metal parts, an automatic motorized washing and dipping tank giving continuous agitation has been announced by *D. C. Cooper Co.*, 1467 S. Michigan Ave., Chicago 5. The tank, which can be operated by one man, can be supplied for cold dipping, hot cleaning or dipping, heated by electricity, gas, or steam. The tank is built of heavy steel throughout



and insulated with rock wool. Inside the tank is a heavy steel rack. The top of the rack frame is equipped with gears, arms fittings, geared motor and cut-off switch, so constructed as to permit the inside rack to raise and lower continuously until stopped by pressing the switch. The rack automatically raises and lowers approximately 10 times per minute, but traveling speed can be lessened or quickened as desired. The tank is also suited for dipping metal parts or other objects in wax or rust preventives.

Roto-Finish Machine

9 Designed to permit time and labor economies in mechanical finishing and deburring of small parts, a Roto-Finish Midget machine has been announced by the

Sturgis Products Co., Sturgis, Mich., for use in small plating shops, finishing departments, and for small parts producers. All mechanical finishing operations, grinding, deburring, polishing, Britehoning and coloring may be performed in the machine, it is

said. It has a variable drive of 35 to 70 rpm. Cylinders are 8 in. wide, 12 in. across the flats. The cover is secured to the cylinder which is mounted on the machine by a lock and adjustable clamp, permitting quick loading and unloading. The machine can be supplied without base for bench mounting. Hand parts separator is supplied and is equipped with drain connection. Interchangeable screens are available in all mesh sizes for separation of chips from parts. The controlled rotary action of the wet mixture of Midget chips and compound is said to produce a surface suitable for plating by uniformly removing burrs, sharp edges and corners on small stampings, machined parts, and diecastings.

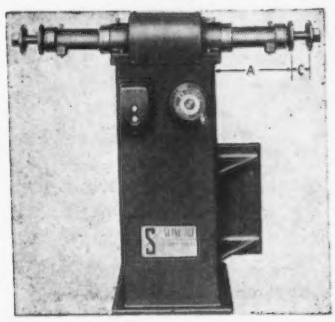
Polishing Lathe

10 Model Vrol variable speed polishing and buffing lathe has been announced by *Hammond Machinery Builders, Inc.*, 1600 Douglas Ave., Kalamazoo 54, Mich.

This is a 3 hp unit having a spindle speed range of 1500 to 3000 rpm, which can be changed by a hand-operated dial, while the lathe is running. The spindle overhangs 8 in. to permit handling of bulky parts and the motor is mounted on the base with V belt drive. The machine is suitable for color buffing, light cut buffing and polishing.

Polishing Machine

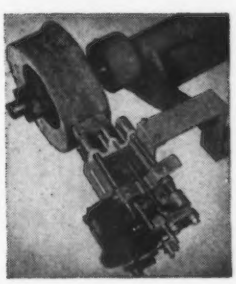
11 A redesigned 2 and 3 hp infinitely variable speed buffing and polishing machine has been announced by the *Standard Electrical Tool Co.*, 2505 River Rd., Cincinnati 4. It is available with open spindle or the enclosed construction, illustrated, with four ball bearings, sight feed oil gage on each bearing housing and shaft lock. The enclosed ball bearing motor is on an adjustable base attached to the back of the pedestal, with power transmitted to the spindle through belt drive. Any spindle speed between 1500 and 3000 rpm is available by turning the Speedial



control. Each change in spindle speed is recorded on the dial. The drive is guarded and equipment includes a push button safety starter having overload protection.

Buffing Compound Applicator

12 Having an intermittent feed control operating at the rate of 14 strokes per min, affording a feed ranging from 0.0015 to 0.015 in. per stroke, a buffing compound applicator has been announced by the *George L. Nankervis Co.*, 5442 Second Blvd., Detroit 2. The applicator can be mounted on any automatic machine, either right or left-hand, and can be adapted to simple or complex multiple stage buffing operations. It is driven by a totally enclosed geared head motor; 110, 220 or 440 v motors are available. The quick action clamp, with adjustable features to compensate for variable thicknesses and the



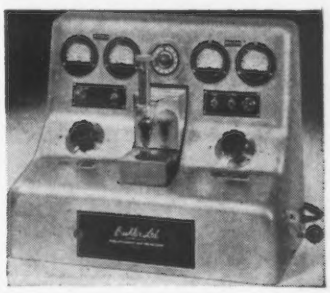
standard carrier will accommodate any length stick of compound up to 4 in. The applicator's light weight of 20 lb is said to permit adaptation to floating heads without disturbing balance.

Brass Cleaner

13 Said to have high detergent ability and no tarnishing action on active metals including copper, brass, bronze, nickel silver, tin and lead, steel and magnesium, an alkali cleaner called Enthone Brass Cleaner, has been developed by *Enthone, Inc.*, 442 Elm St., New Haven, Conn. Its detergent qualities make it suitable for soak or electrolytic cleaning and long periods of immersion do not result in attack on brass, it is said. It can be used also for scrub cleaning, because it does not contain strong alkalis. A feature of the cleaner is the long life during operation due to stable surface active materials and buffered alkali balance.

Electro-Polisher

14 Greater polishing speed and simplicity of operation are claimed for the Buehler-Waisman electro-polisher developed by *Buehler Ltd.*, 165 W. Wacker Dr., Chicago 1, for polishing metallurgical specimens. It can be used with both ferrous and nonferrous metals, accommodating a wide range of sample sizes. In this polisher the specimen is made the anode of an electrolytic cell. Charged atoms or ions from the specimen enter the



electrolyte, resulting in a polishing film which covers the surface of the specimen and offers resistance to the passing of the current. Since this film is thinner on the high spots, more current flows in these areas and consequently more material is removed. This results in a uniformly flat surface, it is claimed. One of the principal advantages claimed for electro-polishing is the freedom from disturbed metal on the surface of the sample. In addition it offers greater speed, requiring less than a minute after the sample has been prepared with fine emery paper. Many samples may be etched immediately after polishing, with the same solution, by reducing the applied voltage.

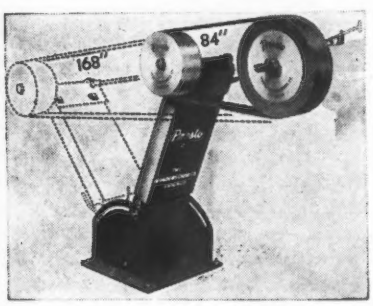
Dust Collector

15 Improvements in the model 1150 Dustkop dust collector, which is designed to increase effi-

ciency under the heavy dust loads peculiar to production buffing and polishing work, have been announced by *Aget-Detroit Co.*, First National Bank Bldg., Ann Arbor, Mich. Though retaining the combination of cyclone separator and spun glass filter as first and second stage air cleaners, three changes have been made: a high compression filter, a new type filter seal and cyclone stack deflector have been added. The high compression filter stops particles of lint and polishing dust at its surface rather than permitting partial entry into the filter. This forms a mat on the under side of the filter which in building up automatically becomes a filter of its own. A sponge rubber seal at the filter edge insures effective seal at all times, it is said.

Back-Stand Idler

16 Quick change to any belt length is provided in a Presto backstand idler announced by the *Manderscheid Co.*, 810 Fulton St., Chicago 7. The idler can be adjusted for any belt length from 84 to 168 in. in 30 sec. or less. It is of all steel construction with double sealed ball bearings. Leaf type springs afford adjustable tension and snubber action eliminates vibration. The aluminum pulley is easily changed from right hand to left hand operation.

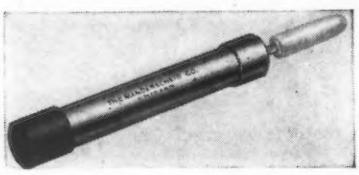


Flexible Polishing Wheel

17 Added to a line of polishing and finishing wheels manufactured by the *Manhattan Rubber Div., Raybestos-Manhattan, Inc.*, Passaic, N. J. is the most flexible wheel of a series of soft neoprene bonded polishing wheels. The extreme flexibility and cushion action of this wheel is said to be due to the fact that the wheel is bonded with a specialty modified compound of neoprene impregnated with abrasive grain. This wheel can be varied over a wide range of densities depending on its ultimate application. A combination of porosity and a soft bond results in a wheel which gives superior finishes, it is said. Its speed is limited to 3000 sfpm. The wheel is suitable for finishing stainless steel, glass, nonferrous and precious metals. It is supplied in the finer abrasive grain sizes or with pumice, rottenstone or other mild abrasives and is said to be effective in blocks and rubbing pads.

Work Holding Spinner

18 Polishing and buffing small round, cylindrical and flat circular parts are said to be possible with the midget work holding spinner No. 221M, announced by the *Manderscheid Co.*, 810 Fulton St., Chicago 7. Only 7 in. long and weighing but 6 oz, the midget spinner facilitates quick and uniform polishing of small parts. The housing is fully enclosed, keeping out dust and grit. The one-piece shaft and brake assembly operates in grease-packed and sealed ball bearings. The shaft extension is ¼ in. in diam, 1 in. long and machined flat on one side for holding the fixture with an Allen screw.



Contact Wheels

19 No clogging of abrasive belts with increased production and longer belt life are improvements claimed for Presto contact wheels, announced by the *Manderscheid Co.*, 810 Fulton St., Chicago 7. The wheels are made of specially constructed Neoprene rubber vulcanized to a metal core. The tough, resilient rubber affords uniform yielding quality for conformation to the work, assuring fast, uniform polishing. The patented design snaps the belt as it leaves the work, beating it clean with 72 hammer strokes per revolution of the wheel. The belt is thereby kept clean and cuts effectively until the abrasive is worn off. Wheels, 14 in. in diam with 2, 3 and 4 in. face, can be used together in forming any desired width. They have three degrees of resiliency, medium, hard and soft.

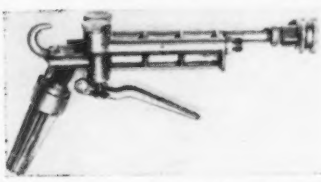
Spray Guns

20 Called Eclipse 46, a heavy duty spray gun designed specifically for the application of very heavy materials at high speed has been announced by *Eclipse Air Brush Co.*, 414 Park Ave., Newark 7, N. J. This gun requires minimum air volume and pressure consistent with the job for which it is intended. It is said to easily handle roofing compounds, fibrated bitumastics, emulsified asphaltums and other materials usually considered impossible to spray. The fluid connection is standard ¾-in. pipe thread. From this point to the fluid outlet there is a 45° angle giving an unrestricted flow of material. The fluid valve has a ½-in. travel, so that there can be no obstruction when the gun is wide open. Eclipse 45, a lightweight, low pressure gun has been developed for products finishing. The

45 not only provides an adjustment for external fan width control, but can be fitted with the Eclipse cone-fan internal nozzle. An assortment of tips and nozzles is available to meet practically any finishing need.

Air and Water Gun

21 High-pressure rinsing and removal of loosened dirt and grease from inaccessible parts of equipment and machinery can be acomplished with a lightweight air and water gun introduced by *Turco Products, Inc.*, 6135 S. Central Ave., Los Angeles 1. The gun is



controlled by a finger-tip lever, operates on regular air and water pressures and connects to standard fittings. No adjustments are required since there are no valves to open or close. Depressing a single lever produces automatically a high-pressure spray. The gun is suitable for use in metal finishing plants, motor overhaul shops, and all types of maintenance and repair units in the automotive and aircraft fields.

Rack Coating

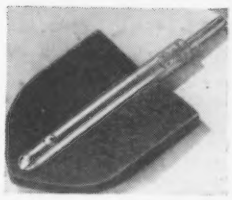
22 Known as Korolac RX-2500, solution for the coating of electroplating and pickling racks has been developed by the *B. F. Goodrich Co.*, Akron, Ohio, embodying the chemical inertness of Koroseal tank lining. A second new development, known as Korolac Primer No. A-208-B, is used in conjunction with RX-2500, to provide adhesion of the Korolac coating to the metal rack. This primer is brushed onto the rack and areas adjacent to the contact points, thereby preventing contamination of plating baths by carryover of solutions underneath the protective rack coating. The new coating is white, opaque, and glossy. Hot alcoholic reverse current cleaners and such oxidizing acids as chromic and 40 pct nitric have little or no effect, it is reported. The resistance to organic solvent cleaners is also good.

Aluminum Oxide Abrasive

23 Made by an electric furnace process which produces grains of an improved shape and structure, each grain being a complete, single crystal, an aluminum oxide product known as 32 Alundum abrasive has been announced by the *Norton Co.*, Worcester, Mass. The single crystals formed in the electric furnace do not require any crushing to size; they assume a chunky, nubbly shape. Grinding wheels made of this abrasive are said to have faster and cooler cutting action and longer life due to the sharpness of the nubbly surfaced grains, to their blocky shape and to their high purity. Fewer dressings are required, it is said.

Abrading Pads

24 RB abrading pads, announced by the *Wilkinson Equipment Co.*, 109 East 69th St., Chicago 37, can be used for cleaning or polishing metal, plastics, cast or pressed composition materials, glass, stone, rubber or synthetics. Other uses include internal grinding, deburring, chamfering, cleaning, finishing and polishing. These flexible pads are made of from 2 to 14 plies of high grade abrasive elements, die cut in four standard shapes, coming in sizes from ½ to 2 in. up to 9 x 10 in. to accommodate openings from ¼ to 6½ in. in diam. Pads are available in grits from 24 to 320



grit. Pads are attached to the driving mechanism of any lathe, drill press, flexible shaft, air or electric hand drill by either an internal or external mandrel.

Plating Barrel

25 Development of a plating barrel made of Lucite acrylic resin has been announced by *E. I. du Pont de Nemours & Co.*, Wilmington 98, Del. The plating barrel is used for metal plating by the tumbling method. Objects to be plated are held in a perforated container which is dipped and revolved in a vat containing the plating solution. The barrel is hexagonal and mounted on a moving stand which allows the machine, gears and all, to be lowered into the solution vat. The gears are also constructed of Lucite, a plastic which is resistant to the acid used in the plating bath. Lucite barrels have no ribs; they are of one-piece construction, the ends being cemented

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to the side walls. The loading door is a tightly-fitting, single sliding panel which forms one of the sides of the hexagon. The Hardwood Line Co., Chicago, originated the barrel.

Rust Preventive

26 Announcement of a product for the prevention of rust on ferrous surfaces between operations and while parts are in storage has been made by *Oakite Products, Inc.*, 30H Thames St., New York 6. Known as Oakite Special Protective Oil, it has found use in plants where temporary or semipermanent surface protection from rust is desired for parts or work, following such operations as grinding, machining, pickling, tumbling and sand blasting. Special Protective Oil imparts a thin, transparent, rust-preventive coating which does not stain or discolor ferrous surfaces, or interfere with accurate gaging, it is said. Parts to be rustproofed either may be immersed dry, or immediately after cleaning and rinsing. Finger prints may be removed by adding 5 pct water to the protective oil.

Solvent Cleaner

27 Designated as Emulsion Cleaner EC-75, a new type of emulsifiable solvent has been developed by *Enthone, Inc.*, 442 Elm St., New Haven, Conn. The product is recommended for the removal of oil, buffing compounds and other organic dirt, as well as solid dirt, from all types of metals including zinc, aluminum, brass and nickel silver. One of its outstanding features is that it will not harm alkali cleaners when it is dragged into them, but is claimed to actually increase their cleaning ability. Emulsion Cleaner EC-75 is used undiluted. The material is a penetrating solvent to replace naphtha, kerosene and chlorinated solvents and, in addition, it has a high detergency and emulsifiability. It is selfdispersing and rinses off quickly; cleans steel faster and alkali cleaning is avoided for phosphate treatments, blackening or organic finishing. It requires no heating facilities.

Corrosion Preventives

28 Of nine corrosion preventives in a simplified line of rust preventives manufactured by *E. F. Houghton & Co.*, 303 W. Lehigh Ave., Philadelphia 33, four are of the removable thin-film solvent type, one is a nonremovable dielectric variety and four are oil-type films varying in viscosity from thin oil film to a medium grease consistency. They are said to meet all peacetime manufacturing, shipping and storage problems. The nine preventives are branded under the Cosmoline series, and include varieties for temporary intraplant protection as well as for shed and outdoor exposure.

Metal Cleaner and Bond

29 Called Pri-Met, a metal cleaner has been produced by the *Johns Mfg. Corp.*, Dunellen, N. J., for safeguarding ferrous metal surfaces against rust and also for removing mill scale. A 10-sec bath in Pri-Met after parts undergo processing will remove rust without harming the base metal, it is claimed, resulting in finely coated metal surfaces that are resistant to rerust and that can be oiled, painted, lacquered or enameled directly without rinsing. As a paint and cement bond, Pri-Met is reported to bind paint to the surface of steel, aluminum and other metals and to be effective in prepairing metal for cementing, either in joining two pieces of aluminum or aluminum with any other metal. Treated surfaces are resistant to rust before and after painting. The product contains a minimum of nonvolatiles and nothing detrimental to paint or its bond, it is claimed.

Cleaning Compounds

30 Announcement has been made by *E. F. Houghton & Co.*, 303 W. Lehigh Ave., Philadelphia 33, of a new series of metal and maintenance cleaning compounds for metalworking products. These are known as the Houghto-Clean 200 series, embodying 17 different products including cleaners for maintenance work, ferrous and nonferrous metals, for use prior to painting or vitreous enameling, electrolytic cleaners and special purpose compounds. In formulating these products, new synthetic detergents and alkalies have been adapted in several products, which have been developed to provide increased speed and efficiency for alkaline cleaning in the production line.

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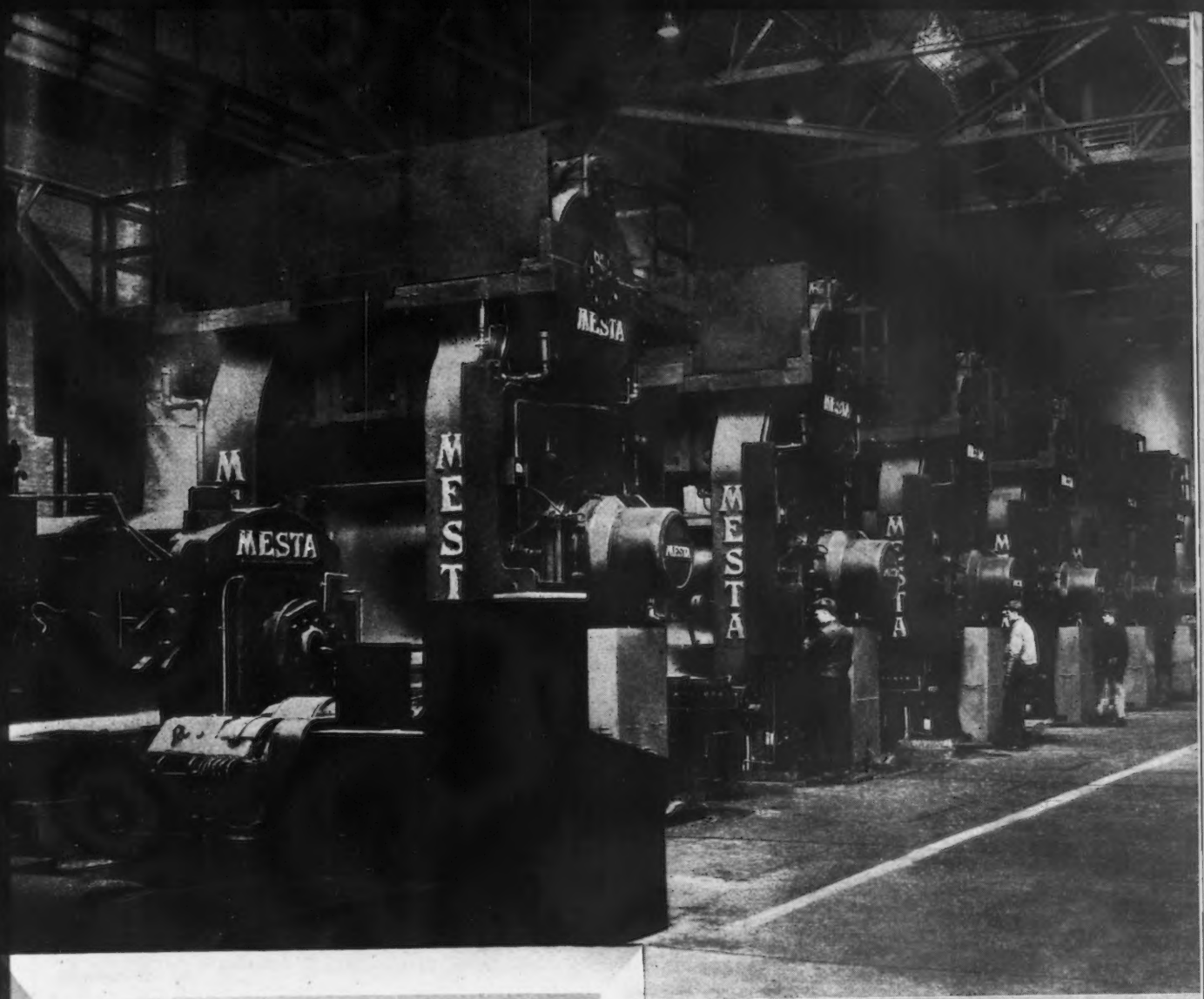

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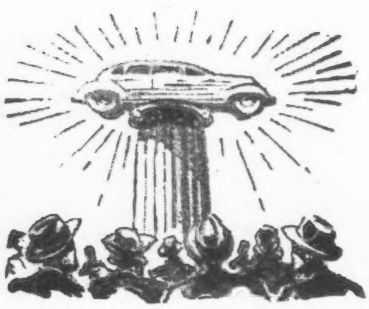
Assembly Line . . .

WALTER G. PATTON

• Ford is using Willow Run production control methods at its Highland Park truck plant . . . More than 1800 tons of steel required for new conveyor system.



DETROIT—Members of the Ford team which accomplished the production miracle of a "bomber-an-hour" at Willow Run are having an opportunity to prove that Willow Run methods can be applied successfully to motor truck assembly.

While E. J. Wedge, plant superintendent at the Highland Park truck plant and his right-hand men, Barney Laney, would be the last to claim any great similarity between building a bomber of relatively fixed design and assembling 100 different truck models on a production line, they are convinced that many of the things learned at Willow Run about plant layout, materials handling and production control can be applied successfully to truck assemblies.

Ford has already invested $2,100,000 in the new 1410-ft assembly line at Highland Park, using the same building which once housed the Model T. The plant which produced the first Ford truck in 1917 is again building Ford trucks and buses at a rate of 50 per day and present indications are that output will be stepped up as fast as manpower and materials will permit toward a goal of 400 units daily.

Each step in the Highland Park plant layout was carefully worked out in advance by Ford engineers at the Rouge, including a scale model which is accurate in every detail down to positioning the workers along the line. Machines, conveyors, piping, spray booths, storage bins—all the necessary tools, equipment and other facilities were included in the wood model which was available at the Rouge for studying the sequences of operations, clearance and other plant details that had to be checked and rechecked before construction work could be started.

THE exactness of the engineering model can be appreciated from the fact that the miniature trucks progressing down the model assembly line are complete in every detail, including each component that is added at the various stations along the line.

Those who saw the Willow Run bomber operation will recall that the entire assembly line was laid out in stations which were numbered and prominently identified. Prior to laying out the line in zones or stations, each operation was time-studied at other bomber plants and the speed of the Willow Run line was selected to permit *completion* of the required operation within a given section. Thus, both the position of materials feeding into the line and the location of workers along the line was fixed. Where an operation was not completed within an assigned station, responsibility could be quickly assigned and the trouble corrected.

Using this method of production control, the man-hr required to build a B-24 bomber at Willow Run was reduced to less than 1 pct of the original requirement, according to a Ford official.

In planning the layout of the truck plant at Highland Park, time-studies from Ford's 13 branch assembly plants located throughout the country were carefully examined. Based on the results of these studies, the new production line speed was calculated and the stations laid out. This information was put on cards which show each of the operations to be performed in that section. A card describing each operation to be carried out is given to the foreman and to the workers assigned to a given station. The time required for each given operation is also included.

According to Ford officials, generous allowances were made in assigning the time necessary to complete each operation and the time schedules were discussed with the union as well as plant foremen who supervise each zone.

ACCORDING to Ford, workers and foremen both at Willow Run and Highland Park have commented favorably on the fact that this system enables each worker and foreman to know exactly where he stands at all times. Ford workers are told that they are efficient workmen if they complete their assigned operation on schedule and the workers, it is reported, have responded favorably to this approach. The fact that responsibility for failures to produce can be determined accurately has been helpful in gaining acceptance of the plan, Ford officials say.

Another advantage of the Ford zoning system is that the replacement of absentee workers can be accomplished quickly and with minimum opportunity for upsetting production.

In the Highland Park plant, workers are always assigned to the job by top supervision rather than by foremen. The foreman's duties are largely confined to seeting that all workers complete their assignment within the zone designated for that operation.

The zone control method also assists in quality control, Ford officials say, since responsibility for defective parts or poor workmanship can be promptly assigned.

While the Ford experience at Willow Run clearly demonstrated the advantage of sectionalized operations when production was increasing, it is believed that the same system will be equally advantageous where it is necessary to reduce operations because of materials and parts shortages or for other reasons.

During the war the entire Ford Highland Park building now used to build trucks was devoted to the production of gears for Pratt and Whitney airplane engines. Following the cessation of hostilities, all equipment had to be removed and the new truck lines installed. The plant occupies 436,840 sq ft of floor

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It's lighter than other bearings but you don't see the real difference till you take off the patented Plya-Seals. The space between inner and outer races is packed with hardened steel balls. No separators. That's the full ball complement for greater weight sustaining and smooth action. All exposed surfaces are cadmium plated or of corrosion resisting material. The PLYA-SEAL keeps in lubricant, locks out dirt and moisture. Made to inch instead of metric dimensions. Bores fit standard bolt sizes.

The Fafnir High-Load offers alert manufacturers ball bearing smoothness where ball bearings were never used before... because it can be smaller, requires no maintenance and is so easily installed and removed. Now adding new smoothness and accuracy to such equipment as business machines, photographic apparatus, printing presses, paper making machinery, dental and medical equipment and farm machinery. Possibly there's an oscillating or rolling assembly in your new design that you could make a winning feature by giving it Fafnir Ball Bearing smoothness. Send blue prints or write for full information. The Fafnir Bearing Company, New Britain, Conn.

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MOST COMPLETE LINE IN AMERICA

space and the three miles of conveyors installed in the plant required approximately 1800 tons of steel.

A NUMBER of interesting innovations in plant equipment were noted by the newsmen who toured the Highland Park plant this week.

For example, Ford drying ovens do not exhaust outside the building. Instead, paint-laden air is filtered and then recirculated within the building. Paint baking ovens are thermostatically controlled and are equipped with explosion-proof doors. Extensive safety precautions have been taken to prevent an explosion that might result on lighting the ovens where gases may have accumulated.

Other equipment of interest included a specially designed machine which rolls a steel ring on the truck wheel to hold the tire in place. A Ford machine inflates 24 tires simultaneously.

Integration of body, chassis, frame, gears and axles to be assembled in a given truck is controlled from a central telautograph booth which simultaneously reproduces at 12 locations along the assembly line the requirements for a truck before it starts down the line. By checking daily production schedules with stockrooms and storage departments before starting the day's operations material shortages along the line can be anticipated and avoided.

The absence of noisy riveting machines was noted, since all riveting equipment is hydraulically actuated with pressures controlled from a central station.

A high point on the inspection trip was the specially designed equipment that turns the frame over as it moves along the line. This action is accomplished by an ingenious use of cams or slots which turn the moving frame a few degrees at a time in a series of six operations until the frame flops over in its sling. No manpower is involved in this operation.

THE elimination of manual operations, long a goal in automotive plants, has been carried several steps forward in the new Ford layout. Coupled with the production control plan described earlier it is expected that once full scale operation has been attained the production efficiency of the new Ford truck plant will equal that of any truck line now operating in the industry if it does not establish a new record for efficient production.

Another feature of the Highland Park operation is the use along the final stations of the assembly line of a moving belt at floor level which is synchronized with the conveyor. This is the stage of the operation where workers usually have to walk along with the moving line or make use of a stool equipped with wheels to keep up with the line. The Ford setup leaves the worker free to use both hands and should be an appreciable factor in reducing fatigue and promoting worker efficiency.

In addition to truck and bus assemblies Ford is also using Highland Park to build tractors and service parts. The plant stocks and feeds replacement parts to all Ford branches. The Ford trim, paint and artificial leather departments are also located at Highland Park.

While the severest test of the Ford truck layout is yet to come, those who inspected the new plant this week are convinced that an excellent beginning has been made and that, when the showdown comes, the Highland Park plant is likely to show the way to many in the industry. The operating results of the section system which was so successfully used at Willow Run will be closely followed by those of the industry who are particularly interested in plant layout and the promotion of worker productivity.

British Manufacturer Announces Postwar Car Of Interesting Design

London

• • • Not a few of Britain's motorists, notably among the wealthier class which relishes (and can afford) a bit of zip in its motor cars, are showing a lively interest in the latest model in the Lagonda line. The first postwar model of this old-line car builder, rated at 100 bhp, embodies several interesting design features.

"Racing car steering," dual overhead camshafts, electrical gearshift, independent springing on all four wheels and a subframe to carry the body are among its special features.

The 6-cylinder engine with dual crankshafts and dual carburetion has direct acting valve actuation, said to eliminate tappet adjustments, as well as removable cylinder liners. Rated at 2½ liters, the Lagonda can do better than 90 mph and covers 20 to 25 miles per imperial gallon, according to the manufacturers. To allow for expected improvements in fuels the car has an octane selector.

The main chassis is of the X-type with a sub frame that includes floor pan, rear seat frame and dashboard fitted to it. The car will be available in chassis only, on the theory that some purchasers will desire special coachwork. Or it can be supplied in a sedan or a 5-passenger convertible. Front springs are of the coil type, while the rear wheels are independently sprung on torsion bars. Wheelbase is 113½ in.

The clutch is of the centrifugal type which disengages when the throttle is closed. This, in combination with an electric gear shift lever on the instrument panel, is said to give almost effortless shifting. Some observers here recall however that the net effect of the centrifugal clutch will be "free-wheeling," an innovation which proved unpopular in American motor cars.

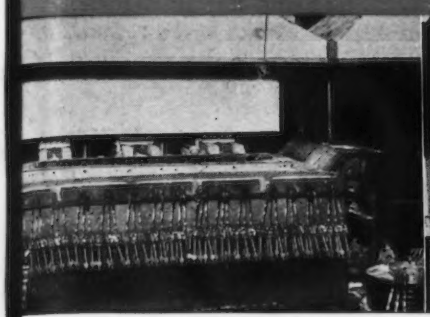
The problem of chassis lubrication has been virtually eliminated by reducing it to one of infrequent replenishment of lubrication reservoirs.

Those familiar with Lagonda's past performance in the construction of standard cars with all the attributes of racers feel certain that this model too will give a good account of itself at high speed on the highways. The combination of a low center of gravity with refined steering mechanism and new suspension should, it is said, achieve this end.

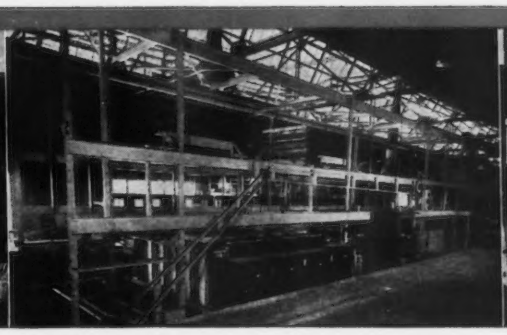
As a chassis only the Lagonda will sell for approximately $4320, plus a purchase tax which must be calculated on the overall cost. The sedan sells for $5480 (approximately) plus a tax equivalent to $1525. The convertible, with tax, will be in the neighborhood of $7565.

THE FIGURES PROVE IT! *The Trend is to-*

AJAX HULTGREN ELECTRIC SALT BATH FURNACES *for all heat treating operations*

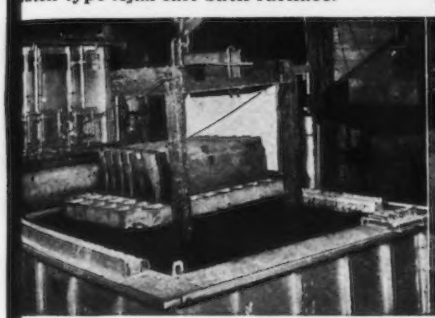


URIZING automobile steering gear parts atch type Ajax salt bath furnace.



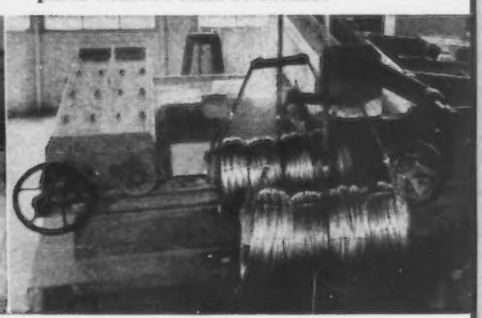
AUSTEMPERING automobile bumpers (3000 lbs. per hour) in a completely conveyorized Ajax unit.

NEUTRAL HARDENING carbon and alloy steel parts without scale or decarb.



IC ANNEALING 9-ton charge of crusher lates in Ajax salt bath quench furnace.

HARDENING HIGH SPEED STEEL tools of all analyses.



PROCESS ANNEALING 750 lb.-charge of stain less steel wire in 20 minutes at 1900° F.

ELL OVER 2,500 units installed in e first 10 years . . . that's the phe-menal record established by the AX-Hultgren electric salt bath fur-ce . . . a record unparalleled in the dustrial furnace industry! The mil-ons of dollars invested are an incon-stable endorsement of the unique AX closely-spaced, immersed elec-ode principle. This patented *internal* ating method is applicable to any at treating operation from 350° to 00° F.—with the following advan-ges:

NIFORM TEMPERATURE—less than 5° variation . . . no local overheating . . . minimum distortion of work.

NG POT LIFE—measured in years in-stead of in weeks.

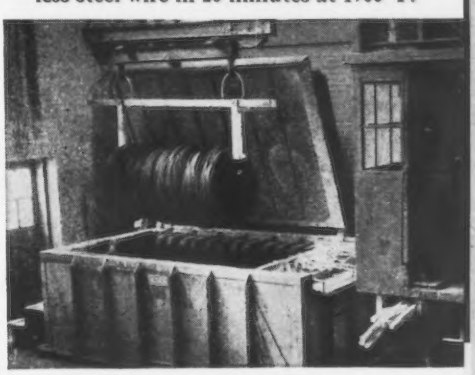
ATMOSPHERE CONTROL—salt bath seals out all air . . . prevents scaling and decarburization.

RAPID HEATING—4 to 6 times faster than radiant or air-convection type fur-naces . . . size and cost of equipment proportionately less.

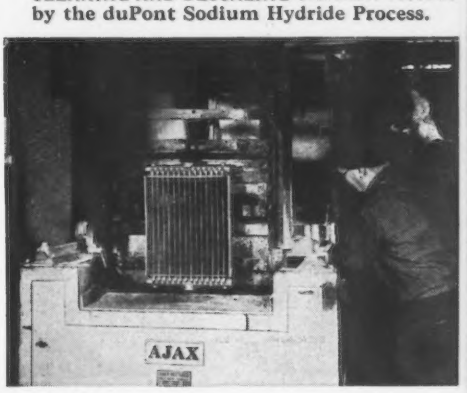
SPACE ECONOMY—requires about ⅓ the floor space of most other types.

READILY MECHANIZED—for low-cost mass production with minimum labor.

Submit specimens of your work for treatment in the new Ajax Metallurgical Service Laboratory. Get positive proof that AJAX furnaces can produce the results you seek before investing a cent in any equipment!



CLEANING AND DESCALING stainless steel ro by the duPont Sodium Hydride Process.



BRAZING 44 copper tubes to radiator manifol simultaneously. Time: two minutes.

AJAX ELECTRIC COMPANY, INC.

Frankford Ave. at Delaware Ave., Philadelphia 23, Pa.

The World's Largest Manufacturer of Electric Heat Treating Furnaces Exclusively!

Associate Companies: **Ajax Metal Co.** • **Ajax Electric Furnace Corp.** • **Ajax Engineering Corp.** • **Ajax Electrothermic Corp.**

In Canada: **Canadian General Electric Co., Ltd., Toronto, Ont.**

If you want to learn more about salt bath heat treating, write on your firm's letterhead for our NEW 72-PAGE BOOKLET

AJAX HULTGREN ELECTRIC SALT BATH FURNACES

Washington . . .

L. W. MOFFETT

• Stronger "Buy American" provision expected in stockpiling act . . . White House rules ANMB must not accept bids exceeding 25 pct of world price.

WASHINGTON—Present indications are that when Congress gets around to establishing its proposed National Resources Policy (HR-1767 and S-35), it is likely to include an even stronger "Buy American" provision than is now included in the existing Stockpiling Act.

Under the Act of 1946, items purchased for stockpiling purposes must be bought from domestic sources when available, when such acquisitions will not disrupt domestic industrial requirements, or when prices quoted are not "unreasonable." Provided also is the authorization for payment of preferential prices for home products.

John Steelman, Assistant to the President, has ruled, however, that the Army-Navy Munitions Board may not accept bids which offer stockpile materials at prices in excess of 25 pct of the world or market prices. This amount is the maximum differential arbitrarily set in 1934 by the Treasury Dept. under the "Buy American" law. Some Congressmen feel that this ceiling is detrimental to the mining industry and will work to limit operations or even close down marginal and high cost mines.

Official sources estimate that at present little more than perhaps 10 pct of the stockpiling acquisitions (exclusive of transfer from war surpluses) are being purchased from domestic sources. This is attributed by a Board spokesman to the fact that virtually all items on the stockpiling "A" list are short in this country; the Board argues, reasonably enough, that the Act prohibits purchases of materials where such buying may interfere with domestic civilian economy.

Be that as it may, a Congressional subcommittee, now conducting hearings for the purpose of establishing a legislative program looking to the conservation and development of National Resources, has requested the Board to submit a report of how much stockpiling procurement has been made abroad and how much from domestic sources. Some committee members have hinted that foreign stockpile purchases may be tied in in some way with the Treasury's efforts to build up dollar credits abroad. Spokesmen for both the Board and the OWMR have vigorously denied these implications.

DESPITE prevailing domestic shortages and criticism of its foreign purchases, the Board would like to triple its procurements over the coming year. In its first semi-annual report to Congress, the Board hinted that for fiscal 1947-48 it would like to have the full $360 million pro-rated under the 5-year program. Contemplated budget cuts, however, indicate that the Board will get much less than this amount.

The Board has ruefully admitted in its report that over the past 6 months it has been hard put to spend $35 million of its $100 million appropriation for the current year. Various conditions, such as high prices and desperate needs of domestic industry, have combined to obstruct buying. Of the 59 items on the "A" list, the Board reported, 23 had to go by the board because procurement at this time would hamper reconversion in view of industrial needs; purchases of several others have been deferred because of high prices.

Revision of needs and conditions just prior to the report, it was stated, showed "31 materials available for delivery both during the current fiscal year (ending June 30, 1947) and during the succeeding 6 months. There are 15 additional materials which would be procured only for delivery between July 1 and Dec. 31, 1947, in view of the expectation that the present tightness of supplies will then have been relieved."

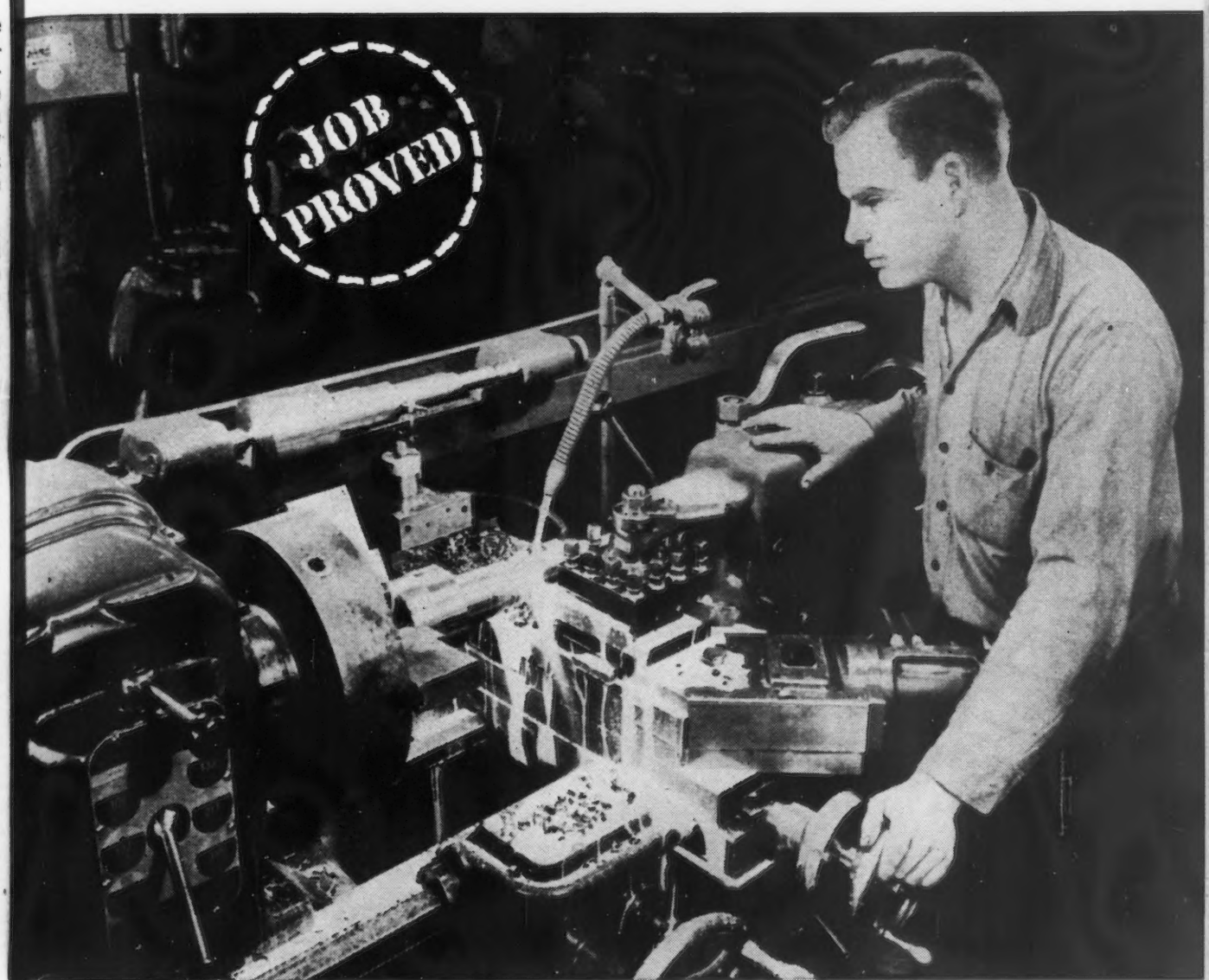
Furthermore, the Board added, indications are that before the end of the next fiscal year, all of the 59 materials listed will be available for at least limited procurement. If the full prorated $360 million were made available for use, if needed, substantial progress could be made in stockpiling and to make up for lost time during the scarcity period. Approximately 80 pct of the appropriation would be used for actual procurements; the remainder would be necessary for handling, storage, inspection, administration and attendant expenses.

BECAUSE of the unavoidable delay caused by prices and scarcities, the Board reported that commitments through December amounted to only $34.8 million, leaving $65.2 million available for the remaining 6 months of the current fiscal year. In view of present conditions, however, the Board believes that it could expend $100 million by June 30—thereby calling for a deficiency appropriation of $40 million. It is not likely, however, that the additional money will be forthcoming although such appropriation would leave the program still $220 million short of the amount which Congress itself estimated is necessary.

In any event, the Board is getting ready for full steam ahead on the program with whatever funds Congress sees fit to make available. In preparation, it has put the finishing touches to its program for setting up industrial advisory committees and those having to do with stockpiling will probably be organized and ready to start to work by the time the amount of appropriations for the coming fiscal year is definitely decided upon by Congress.

"BUREAUCRATIC autocracy" at its worst and a pattern showing how defense of large appropriations for clerk hire can be

Turning S.A.E. 4145 Annealed . . . 315 S.F.P.M.



SUNOCO EMULSIFYING CUTTING OIL

Cools and Lubricates Carbide Tool Removing approximately 23 Cubic Inches of Metal per Minute

Here are the facts on a typical job where Sunoco Emulsifying Cutting Oil makes possible heavy cuts on annealed 4145 steel.

- **Operation:** Turning 4½" shaft and removing approximately 23 cu. in. of metal per minute
- **Machine:** 16" x 54" "AMERICAN" Pacemaker multi-production lathe
- **Material:** S.A.E. 4145 annealed steel
- **Spindle Speed:** 280 R.P.M.
- **Depth of Cut:** ⅜"
- **Cutting Speed:** 315 S.F.P.M.
- **Feed:** .017"
- **Type of Tool:** Cemented carbide
- **Cutting Lubricant:** 1 part Sunoco to 20 parts water

Sunoco Emulsifying Cutting Oil forms a stable emulsion when mixed with water. Its lubricating and cooling qualities make it particularly efficient for precision work at high speeds.

For more production . . . better finish . . . longer tool life . . . call your Sun Cutting Oil Engineer or write Department IA2.

SUN OIL COMPANY • ***Philadelphia 3, Pa.***

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SUN
SUNOCO
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PRODUCTS

built up constituted the basis for a brief dissertation recently by Representative Frederick A. Muhlenberg, R., Pa. The story centers around a letter with an appended list of 1500 industrial plants sent to the Dept. of Labor by the national secretary of the CIO-USWA. The letter said that disputes between the union and each of the listed plants existed. The Department, said Mr. Muhlenberg, took the list as gospel. It did so, he declared, on the strength of a ruling by a former Attorney General, and under the signature of Bernard Greenberg, docket officer, 1500 copies of the letter were sent to as many employers. The letter, the Representative declared, told the employers that disputes existed at their plants and that therefore a 30-day conciliation period was in effect, during which they were expected to adjust the disputes. The letter, in the opinion of Representative Muhlenberg, must have been a shock to a lot of employers.

Mr. Muhlenberg declared that he could not imagine that 1500 disputes in one industry ("nonbasic steel") suddenly existed. In the case of his constituents and certainly many others, Mr. Muhlenberg said it is not true. He inquired if any one could believe it sound procedure to send out 1500 copies of a letter, at a cost, say, of a dollar each, on the say-so of some labor leader without questioning the accuracy of his allegations.

MR. MUHLENBERG wanted to know if the automatic and instantaneous action by the Dept. of Labor was merely an example of a silly ruling by the former Attorney General based on a misconception of activities of the business world and which ought to be changed by an application of common sense. He further asked if it is on the other hand perhaps a flagrant exhibition of the cowed attitude of "one of our bureaus in dealing with an aspect of labor relations; if it is merely an example of the automatic service we desire from our clerical help for which we must set up money in our budget," or is it another example of a bureau flushed with power demonstrating their authority over helpless—and sometimes almost hopeless—manufacturers?

"Was it silly, or was it sinister—and shall he continue such procedure?" Mr. Muhlenberg inquired. "I ask it, but the Congress must answer it."

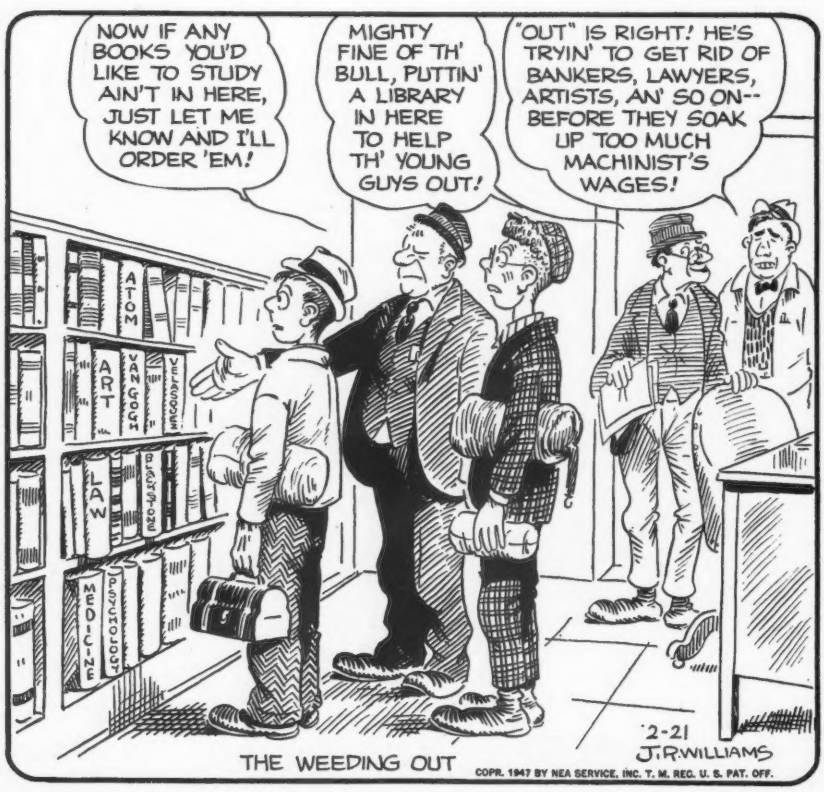
STOCKPILING OPERATIONS

June 1939—Dec. 1946
(To nearest thousand dollars)

Period	Materials Purchases	Freight Handling	Storage Inspection	Administration
June 1939—December 1945....	$46,943,000	$6,888,000	$709,000	$201,000
January 1946—June 1946.....	42,000	176,000	73,000	20,000
June 1946—December 1946....	34,937,000	390,000	377,000	61,000
	$81,922,000	$7,454,000	$1,159,000	$282,000

It should be noted that $34,937,000 listed for the third period represents both actual expenditures and commitments, leaving $65,063,000 available for the period January 1947 through June 1947. In addition, there is an unexpended balance of $23,875,000 left over from 1945 but which is frozen for expenses in connection with transfer of surpluses to the stockpile. The above table is compiled from the ANMB report to Congress as of Jan. 23, 1947.

THE BULL OF THE WOODS — BY J. R. WILLIAMS



Three More Guaranteed Market Contracts Asked

Washington

• • • **Three more guaranteed** market contracts which are expected to provide an additional 13,700 ready-made houses for the NHA emergency housing program this year have been ordered by Housing Expediter Frank R. Creedon.

These bring to 10 the number of guaranteed market contracts under the housing program which are anticipated to produce 82,500 units during 1947.

The new contracts to be negotiated by RFC are with Texas Housing Co., Dallas, for 10,000 wood paneled units; General Houses, Inc., Chicago, for 2000 wood and plywood units; and, General Homes, Inc., Columbus, for 1700 aluminum units.

Construction of the metal units will consist of aluminum sheets riveted to aluminum bands to form the framing for walls, partitions, ceiling and roof; insulation board is attached to the framing on both sides and covered with thin aluminum sheets. Roof panels are supported by steel trusses.

THE HOLE STORY . . . *fast*

The new No. 212 Bryant Automatic Internal Grinder *roughs* and *trues* and *finishes* and *stops* automatically. It requires a minimum of operator attention. It has 9″ maximum swing — 3″ grinding traverse — 12″ total wheel traverse.

The wheelhead shown is the Bryant Hi-Frequency direct drive motor built to operate at speeds up to 100,000 R.P.M. The wheelhead is carried on a hardened and ground cylindrical slide.

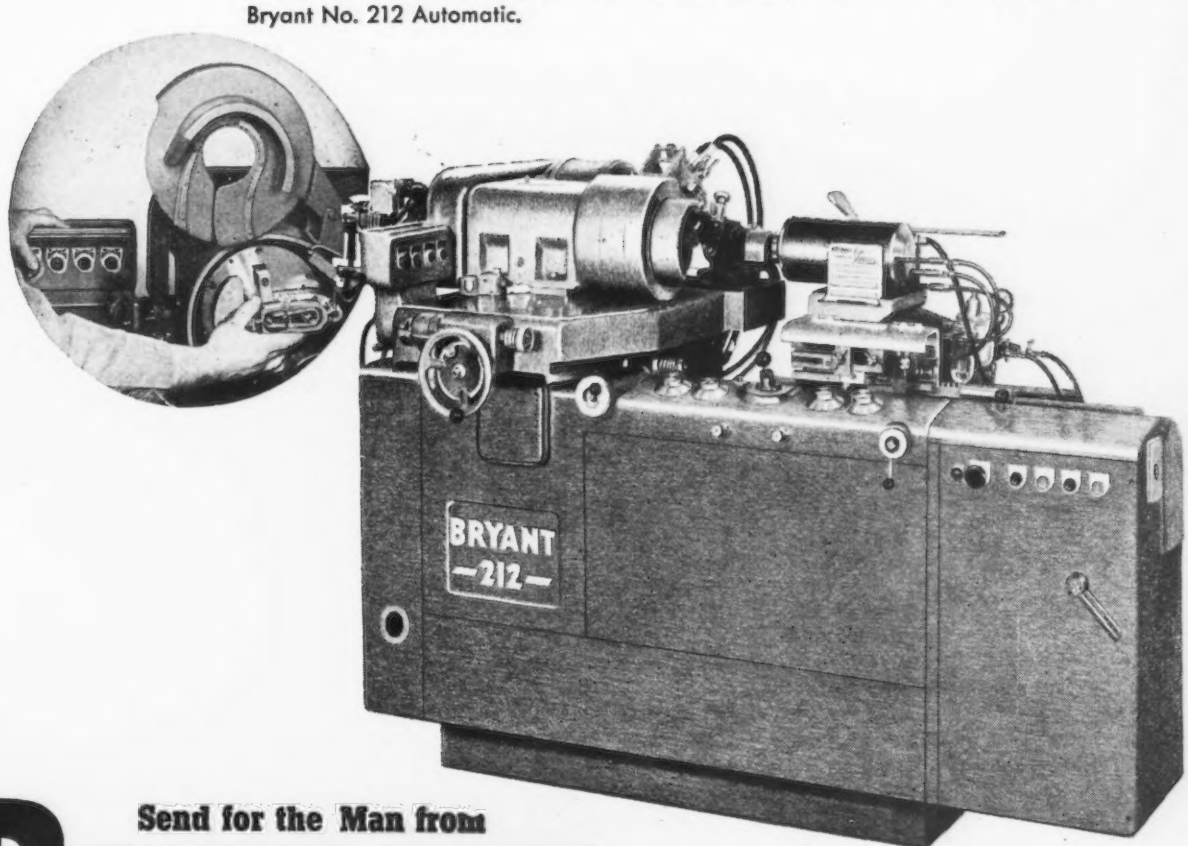
The cross-feed is in the work table which rides on anti-friction bearings and is controlled by a precision lead screw. The work spindle is mounted in preloaded ball bearings and is dynamically balanced to assure precision work.

An electrically controlled hydraulic system provides smooth operation and simple cycle change.

Automatic work sizing is accomplished by any of three methods: by a plug gage mounted in the work spindle; by a diamond contacting the bore; by the wheel trueing diamond.

Operator attention is further minimized by such features as convenient grouping of simplified controls and automatic pressure lubrication.

For a better product and a better profit, ask for further information on the Bryant No. 212 Automatic.



Send for the Man from

BRYANT

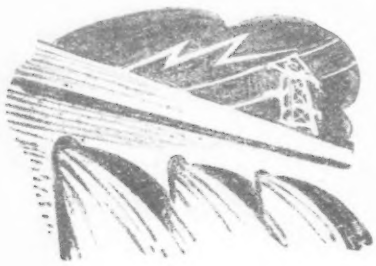
BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

West Coast . . .

ROBERT T. REINHARDT

• Spring brings more than birds and flowers to industrialists . . . Surplus metal stocks in Los Angeles declining rapidly . . . CIO gains bargaining right at Geneva.



SAN FRANCISCO—From present indications the approach of spring will bring with it more than bursting buds and the songs of birds for the metal producing and metalworking industries of the Coast.

In addition to its more pleasant side, spring is the traditional time to bring out the sulfur and molasses. It appears now that industrialists of this area are not going to escape some rather bad tasting medicine this spring in the form of increased demands from various unions concerned with the metalworking field. Several major contracts expire the latter part of March and early April and already preliminary demands and negotiations have begun.

The machinists' strike of last year still brings back headaches to many concerns which were closed for several months and sustained serious financial loss during that period. Now the Machinists Lodge 68 of this city is considering a demand for a possible 25 pct wage increase and as it represents 3000 machinists in shops and plants here which affect production of thousands of other workers, these negotiations will be watched with considerable interest. The contract does not expire until Mar. 31 and final demands will not be served upon employers until that time.

CIO's United Steel Workers of America have already notified the American Can Co. here to the effect that revisions in wages and conditions are expected when the present contract expires on Mar. 15. This union is the bargaining agent in seven California plants and it is understood that reductions in the number of job classifications as well as wage increases will be asked for.

According to union officials, the proposals made thus far and still not negotiated, include demand for skilled groups of hourly rates of $2.25 an hr down to $1.60 an hr and semiskilled workmen, a uniform rate of $1.40 an hr instead of the prevailing rates of from $1.16 to $1.28½ an hr.

In a very hush-hush atmosphere, the ninth annual convention of the Pacific Coast Metal Trades Council held last week discussed blanket wage increases and industrywide contracts covering all Pacific Coast metal trade workers. The 250 delegates to this AFL union claimed to represent approximately 150,000 shop and shipyard workers of the Pacific Coast.

The coastwide shipyard contract is up for renewal in March and it is believed that any proposals adopted at this convention will be presented at that time. It is known that union leaders presented a strong case before the delegates, instructing them to present a united front against antilabor legislation which is now pending.

All is temporarily quiet between the steel warehousemen and jobbers or distributors who granted a 12½¢ per hr increase in January as an interim raise and extended the present contract until June when it will be opened for renegotiation. Both the CIO and AFL unions acceped this increase and contract extension until that date.

Electrical workers are expected to present new wage demands within the next month or two and from present available information it is understood that demanded increases will be substantial.

LOS ANGELES—War surplus metals stocks in the southern California-Arizona region will be sold out by the War Assets Administration's Los Angeles office within the next 6 months, unless additional stocks are declared surplus, according to a report released to THE IRON AGE. Approximately half of a $20 million stock acquired to date has been sold, the report indicates.

Prepared for C. P. Fickes, Los Angeles regional director, by Ralph Olson, chief of the region's Metal Sales Div., the analysis covers virtually all phases of the division's sales activities. The iron and steel section, at the present rate of sales, will be closed out in about 5 months, nonferrous metals in approximately 5½ months, and valves and fittings in less than 4 months, according to the report.

In the currently unsold inventory, of just under $12 million at acquisition cost, 50 pct is iron and steel, 23 pct nonferrous metals and 27 pct valves and fittings. December disposals by the Metal Sales Div. were $3,900,000 at acquisition cost.

Recovery averages have been fairly uniform, except during months when quantities of scrap, mostly aluminum nonstandard valves and fittings were sold to highest bidders. They were: July, 63 pct; August, 65 pct; September, 69 pct; October, 42 pct; November, 53 pct; and December, 24 pct.

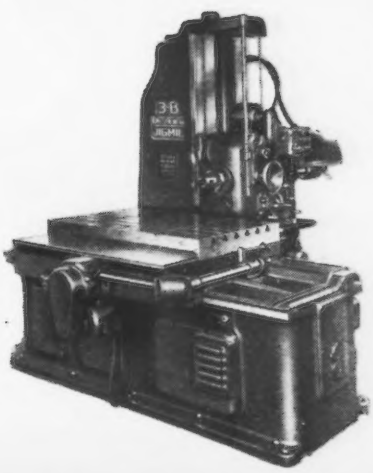
Sales of new stock at fixed prices indicate the region's market is absorbing surplus metals at a fairly consistent rate. In August, for example, sales—recorded at acquisition costs—were $1,598,000 and in December they were $1,866,000. However, sales at sealed bid climbed from $11,000 in August to $2,006,000 in December.

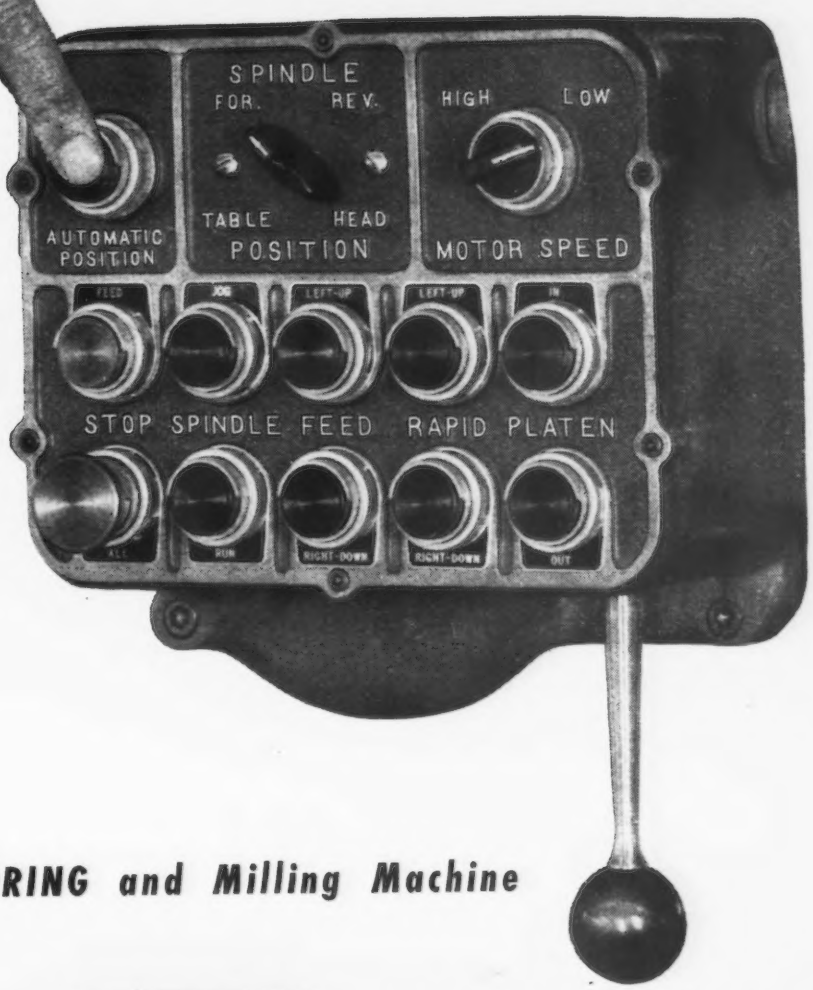
An analysis of shifts in buyer interest brings out that sales to wholesalers are declining, while those to retailers have increased sharply. The August-December comparisons, according to the Olson report, show these buyer shifts: Wholesalers, 67 pct—59 pct; retailers, 2 pct—21 pct; veterans, 20 pct——8 pct; industrial users, 9 pct—7 pct; exporters, 1 pct —0 pct; U. S. and other government agencies, 1 pct—4 pct; miscellaneous buyers, 0 pct—1 pct. The percentages were based on sales totaling $1,800,000 in August and $3,900,000 in December, both figures also being acquisition cost.

Of approximately 40 million lb of aluminum scrap so far acquired by

Automatic Precision

. . . beyond human skill with push-button control





The Model 3-B JIGMIL

PROVIDES accuracy beyond human skill by push button control.

Automatic positioning between holes is controlled to within less than one ten-thousandth part of an inch.

Retraction and repositioning of the work for measuring or tool changing is by push button operation.

Any function is responsive to this centralized finger tip control.

The World's Finest BORING and Milling Machine

DeVLIEG MACHINE COMPANY DEVLIEG JIGMIL **450 FAIR AVE. FERNDALE 20, (Detroit) MICH.**

the Los Angeles Metal Sales Div., 33 million lb have been sold. The remaining 7 million lb will be up for bids within the next 60 days.

CARLETON B. TIBBETTS, president, Los Angeles Steel Casting Co., estimated 4000 manufacturers in southern California have facilities for production of 2600 part items which the Ford Motor Co. hopes to buy in California. (THE IRON AGE, West Coast, Feb. 13.)

"The integrated steel industry developing in the West now is one of the factors which will make possible the carrying out of the Ford plan. Ford has stated if its new purchase policy proves successful here, its buying in the state would amount to about $50 million annually. We think when the program is in full swing it will create about 5000 permanent jobs," Mr. Tibbetts said.

SALT LAKE CITY—The American Federation of Labor lost its toehold in the basic steel industry last week when workers at the Geneva Steel Co. voted the CIO United Steel Workers as their bargaining agent.

Of a total eligible vote of 2490, the CIO took 1168, AFL 991, no union 14.

Last year the AFL won bargaining right by a slim majority in which a contested ballot decided the election. This recent campaign was carried on in true torchlight tradition with both sides using mass meetings, newspaper and radio advertising, as well as individual electioneering to swing votes.

The 317 nonvoters might have swung the election the other way, but so far as is known at the present time there is no contest of results and no ballots were challenged.

Observers are anticipating a move by the CIO group to institute portal-to-portal suits in conformity with the national pattern of this union and contrary to the policy of the AFL at the plant which up to now had been that of watchful waiting.

The nonferrous metal mining industry is also in a slight turmoil at the present time through a three or four-way split over the premium price plan which expires June 30 in the absence of continuing or substitute legislation.

Some of the leading figures in the industry want neither subsidy nor the governmental controls which the premium price plan brought them. Their attitude is that mines which cannot operate on an open market should be closed down—and the quicker the better.

Others, recognizing the large reserves of marginal ores which would be eliminated from production under this policy, favor varying degrees of governmental assistance for high-cost producers. One segment thinks that this assistance should be extended through governmental purchases for stock piling; another group favors graduated straight bonuses on initial production with an elimination of control; and still another faction wants the existing premium price plan continued.

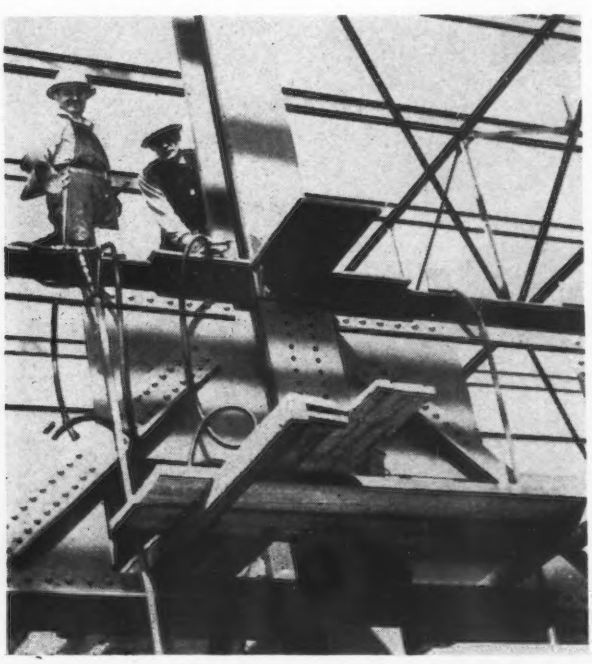
It appears that Congress will have to make its decision in the face of a divided industry.

TACOMA, WASH.—Aluminum production in the Pacific Northwest is rapidly increasing and if the present rate continues, near peak production will be realized by midsummer.

The fourth potline at Reynolds Metals Co.'s Troutdale, Ore., plant has been put into operation which raises the annual capacity to approximately 142 million lb. The first line was started in October of last year soon after Reynolds took over the plant on a 5-year lease from the Federal Government.

The local aluminum plant formerly operated by Olin Industries and now by The Permanente Metals Corp., is expected to start its first potline on Mar. 1 and the second about one week later with full operations scheduled for April. Good progress has been made in putting the plant back into operating condition and capacity of 40 million lb of aluminum per year will be realized earlier than expected.

The Permanente Metals Corp. plant at Mead is still operating only five of the six potlines there but as soon as additional soda ash becomes available for the reduction of alumina at the Baton Rouge plant of this corporation, it is expected that this last production unit will be put into operation.



° ° °

UP IN THE WEST: *At Van Nuys, Calif., this team of riveters is at work on the Chevrolet assembly plant. Steel is going up at a rate of more than* 100 *tons a day; the whole project will use about* 7500 *tons of structural steel. Bethlehem Pacific Coast Steel Corp. is fabricating for Wm. Simpson Construction Co., the general contractor.*

° ° °

Veterans Priority Widened

Washington

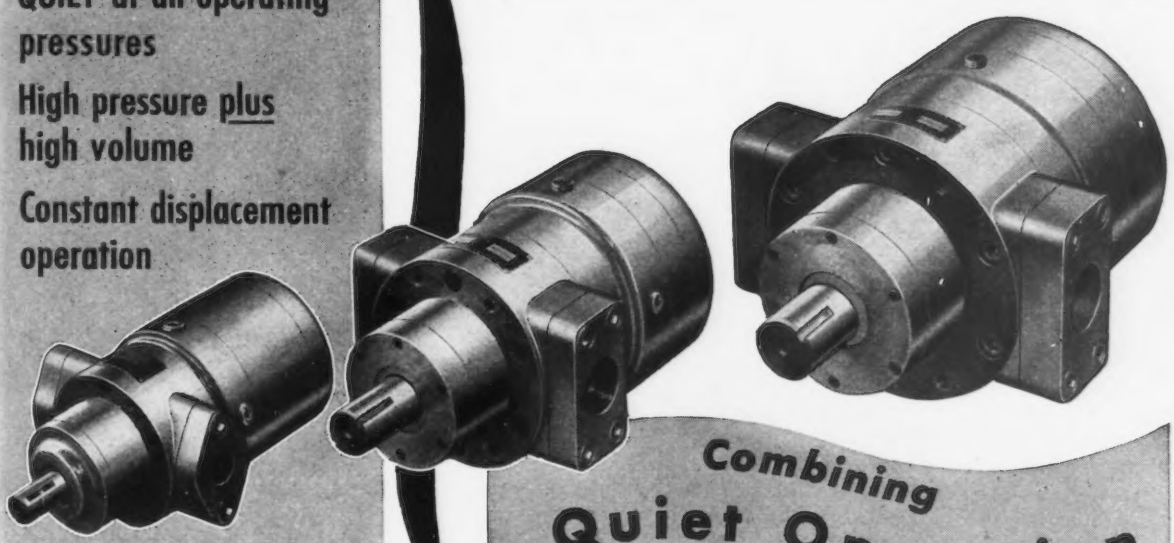
• • • **Coincidental with** the transfer on Feb. 25 of surplus personal property disposal within the territories and possessions of the United States from the Interior Dept. to the WAA, veteran priority certificates for purchases will become usable in those areas. Heretofore, priority certificates had to specify the territory or possession in which they were to be exercised.

DENISON 3500 SERIES Hydraulic Pumps

QUIET at all operating pressures

High pressure plus high volume

Constant displacement operation



Fewer parts—extremely compact

ALL thrust bearings eliminated

Unique two-piece shaft absorbs deflection . . . reduces bearing wear

Axial piston design lengthens service

Pressure-balanced piston shoe—no direct contact between shoe and cam plate

Combining Quiet Operation High Pressure High Volume

Now you can have hydraulic pumps that combine *speed* with *power* in a degree never before attained . . . pumps that operate *quietly* throughout their entire speed range . . . pumps so greatly simplified in construction and operation that they bring a new conception of long service-life and low maintenance cost.

Exclusive design of these axial piston, constant-displacement pumps provides high-volume delivery at all operating pressures. Actual tests prove that they will operate continuously at 1200 rpm, delivering pressures of 3500 psi with volumetric efficiencies of 95% *or more.*

Among the many outstanding features built into these unique hydraulic pumps is a newly developed pressure-equalization principle, which eliminates the "scream" or noise produced by ordinary hydraulic pumps. They're amazingly quiet at *all* pressures.

Denison HydrOILic Pumps in this 3500 series are available in three models, delivering volumes of 6, 17, and 32 gpm. Write for complete details.

HydrOILics INDUSTRY'S RIGHT HAND

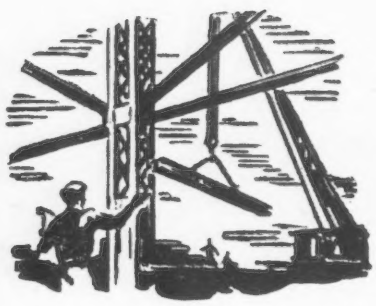
THE DENISON ENGINEERING COMPANY
1158 DUBLIN RD., COLUMBUS 16, OHIO

DENISON EQUIPMENT in APPLIED HydrOILics

European Letter . . .

JACK R. HIGHT

• Chaotic fuel supply picture principally in electric power, harassing British industry . . . Extension of emergency program seen . . . French detail plan for internationalization of Ruhr industries.



LONDON—An abnormal siege of snow and ice at the end of January and the beginning of this month with accompanying low temperature periods has added to the serious fuel problem which is harassing Britain in general and industry in particular. During January the President of the British Board of Trade, Sir Stafford Cripps, announced jointly with the Ministry of Fuel and Power that the fuel allocation system for industry was being completely revised, and simultaneously announced what he then described as 25 pct cuts for most industries, excluding gas and electricity. The result of these cuts in iron and steel and other industries has been confusingly assessed in the British press, and it is certain at this writing that no one has any completely accurate idea of exactly how much coal supplies to industry were reduced, and exactly what the result will be on January and February production levels.

The 25 pct reduction program which was announced in January, however, did not anticipate the chaotic disruption of transport which has been brought about by unusually heavy snowfalls over all of England. The disruption of both rail and coastwise shipping traffic has resulted in an almost unbelievable fuel supply picture, particularly with respect to the electric power industry at this moment. An emergency program has been developed which blacks out all domestic consumers and nearly all industrial consumers during 5 hr of the normally peak period each day. This program, which was started on Feb. 10 on the assumption that it would last for three days, seems more likely now to be a 10-day expedient, which may well be spread to cover all of England instead of the three-fifths originally included, and which quite conceivably could last through the end of February. An obviously hastily developed plan to build up coal stocks, the program is now beginning to meet with criticism from technicians in power stations who assert that the desired savings in fuel probably will not result from the efforts. All of this cutting and recutting only adds to the conflicting ideas as to the actual outcome of steel production for the first quarter of 1947.

The confusion on the subject is contributed to by the fact that the cuts which Sir Stafford announced in January were based on November allocations rather than on actual deliveries of fuel in any given period. Thus, although some firms could ill afford a 25 pct cut from their November deliveries, allocations had been running in many cases substantially higher than actual deliveries. According to the minister, the new allocation plan was designed to get deliveries more in line with allocations so that any particular manufacturer could be reasonably certain of obtaining in any month deliveries approximating allocations.

ACCORDING to the plan as announced by Sir Stafford, during the difficult 6-week period from Jan. 15 to the end of February there simply would not be sufficient coal to meet all needs in England. He had chosen at that time to make the decision that domestic consumers, gas and electricity firms, and the railways would not accept any further cuts, but that all industry both essential and nonessential would accept the 25 pct reduction on their previous allocations. In practice, however, there has not been sufficient transport available to divert this extra coal from industries where it was previously being delivered to the undertakings which were to benefit. As a result, deliveries have in fact been going more or less by default to the old consumers, except where snow has halted transport altogether.

As far as the steel industry is concerned, the result of the coal cuts cannot be assessed until January and February production statistics are officially released. The British press took a flyer at scare headlines when the cuts first became effective, with one daily newspaper suggesting that the result would be the loss of a million tons of steel, but this figure is wildly exaggerated. It seems more likely that a quarter of a million tons loss would be a conservative guess at this time up to the end of February, with about a 20 pct loss for each week thereafter that the disruption continues.

As far as steel firms were concerned, they have been not a little confused by the whole cutting program, as they were at first not seriously concerned because the cuts would have been based on November allocations while in fact November deliveries had been at the rate of 82 pct of the allocation. Thus the 25 pct cut meant in fact that the industry would only be losing 7 pct of its fuel supply. A revision of opinion on the part of the Ministry indicated that the 25 pct cut as far as steel was concerned would have to be made from some other reduced allocation in order to save more coal.

THE only possible safety valve of the program was the allowance for regional coal boards scattered over the United Kingdom to make supplementary allocations as required by essential firms. Detailed information on this subject is, of course, difficult to obtain, but inasmuch as the allocations have been worked out previously on a regional basis, it seems likely that the steel firms have their contacts well established in the re-

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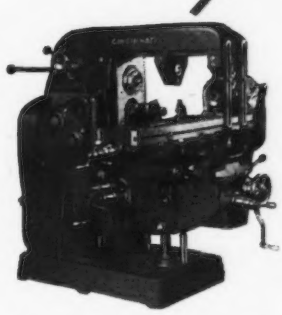

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gional coal boards and will obtain the maximum of assistance in the way of supplementary allocations.

Almost as the 6 weeks' crisis period began the weather here in England changed from its usual wintry wet to cold and snow, and has stayed in that condition. This unusual blast has undoubtedly increased the consumption far beyond government estimates, and therefore the early January reductions are certain to remain longer than the original 6-week period for which they were planned. The government had begun to worry somewhat on this point even before the heavy weather set in, and officials had suggested that perhaps the 6 weeks' program would by force of necessity stretch out until Apr. 1, but the best that can be offered in the way of official enlightenment at present is an ominous silence.

In addition, the snow has been so heavy that in many locations miners have been unable to get to the pits, and in many more cases trains have been unable to move loaded cars away from the pits, and a shortage of cars has resulted which has forced the closing of the mines themselves.

THE impact of such a severe winter is doubly serious here because industry and transport systems in general lack the required facilities for maintaining operations in the face of heavy snow and freeze-ups. The few snow ploughs which England owns were mostly bogged down days ago and are hopelessly behind in the task of keeping main roads passable.

In the steel consuming industries the coal cuts have in many cases been heavier and have had correspondingly more serious results. The principal automobile manufacturers have shut down as they are in the black out, and some not in the restricted zone have had insufficient fuel to operate. In most other industries shortened work weeks are the rule, in many cases down to as low as two days per week.

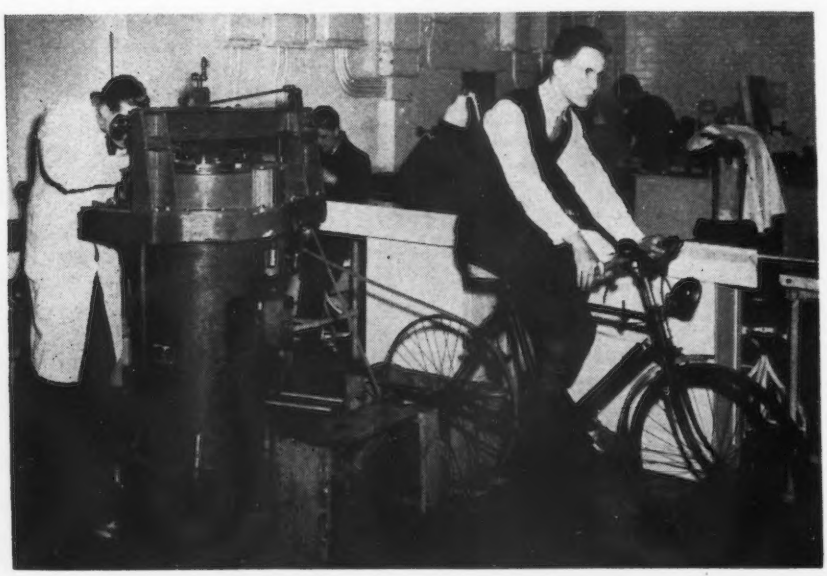
As developments in the fuel situation became increasingly worse, criticism of the Labor Government both by the opposition party and by some members of the government itself became increasingly strong. The political future of Emmanuel Shinwell, the Minister of Fuel and Power, who is the appropriate government official, is in doubt at the moment, and many interested observers feel certain that he will lose his Cabinet post as a result of the crisis. The Conservative Party has lost no opportunity of criticizing the government as bitterly as possible, and in general the people of England are at the moment living from one weather forecast to the next, and gleaning most of their warmth from the reflected heat of debates in the House of Commons.

PARIS—A detailed French plan for the control of the Ruhr has recently been discussed in Paris and will form the basis of the French position in forthcoming discussions in Moscow on the peace treaty with Germany. The proposal is for the United Nations control of the vital triangle of Western Europe lying on the eastern Rhine bank between Wesel, Lippburg and Wiesdorf. This area in prewar days produced 90 pct of Germany's coal, 72 pct of its pig iron, 74 pct of steel ingots and 69 pct of its steel products.

The French plan goes beyond control, providing for the ownership and management of the industries in this zone to be international. The proposal is for this triangle to be divided into 12 areas, each headed by an allied citizen, together with allied technical advisers and a manager who would be a Ruhr German. For each industry the creation of an allied corporation is proposed, each with a board of directors appointed by allies who are represented in the administration of Germany. The board would select a director-general for the firm who would be from one of the nations represented on the board. A consultive board composed of 50 pct German trade unionists and technicians and 50 pct allies appointed by the directors would also assist in the management.

Prices for steel products are to be fixed at an economic level. The French plan involves "socialization" of the industry, and no private investment in such firms is contemplated. Profits would not go to the Allies, but would remain at the disposal of the Ruhr government. Part would be paid to the companies providing their work was satisfactory.

GOING BACK: *Harking back to the days when manpower turned the small wheels of industry is this scene in a London factory where a man on a bicycle provides power to replace that cut off by the coal shortage.*



New Deputy Administrator

Washington

• • • **Appointment of** Thomas E. Drumm, Jr., as Deputy Administrator, WAA, Office of Real Property Disposal, has been announced, effective Feb. 18, 1947. He succeeds Clinton F. Robinson, who becomes a special assistant to the Administrator.

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Superbly Staffed by top-flight steelmen, WISCONSIN has one prime objective: to make the best possible steel for our customers. Every man in the mill works toward that goal.

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PERSONALS

° ° °

WILLIAM V. BUSH, president, Detroit Sheet Metal Works.

• **William V. Bush** has been elected president and **Walter V. Baker,** vice-president of the Detroit Sheet Metal Works, Detroit, Mich. Mr. Bush has been active in the management of the organization for over 30 years. Mr. Baker recently returned from service in the U. S. Army.

• **Carl S. Vogel** has been elected to the board of directors of the Edgcomb Steel Co., Philadelphia. Mr. Vogel has been associated with Edgcomb for the past 18 years and will continue to serve as manager of sales in addition to his new duties.

• **F. H. Eaton,** heretofore sales engineer of American Car & Foundry Co., New York, has been appointed assistant to the vice-president. **H. J. Russell,** heretofore sales agent, has also been appointed assistant to the vice-president.

• **F. B. Langreck** has been appointed technical adviser of the Monsanto Chemical Co.'s general development department, St. Louis. **J. M. Graham, Jr.** and **W. Kenneth Menke** were appointed as assistant directors. Mr. Langreck is one of the company's senior technologists and he will serve in an advisory capacity in major process and project studies. Mr. Menke will be in charge of the technical scouting and liaison section of the department, and Mr. Graham will be in charge of the department's chemical engineering and project evaluation section.

• **Charles S. Hegel** has been appointed manager of the stainless steel division, and **John W. Queen,** manager of the alloy steel division of Joseph T. Ryerson & Son, Inc., Chicago. **G. Van Dyke,** former head of the special steels division, has retired after 30 years' service with the organization. Mr. Hegel joined the company in 1928, spending 3 years at the Chicago plant followed by 4 years at the Milwaukee plant where he was in charge of the special steels department. He returned to Chicago in 1945 as manager of the special steels department at that plant. Mr. Queen became a member of the Ryerson sales staff in 1933 at the New York plant of the company. He was appointed manager of the alloy steel department at New York the following year.

• **John F. Voris, Jr.** has been appointed Chicago district sales manager of the aluminum division of the Reynolds Metals Co.

• **Dr. William A. Mudge** has been appointed director of the technical service section of the development and research division of the International Nickel Co., Inc., New York, and **William F. Burchfield** has been named assistant director. Formerly assistant director, Dr. Mudge succeeds O. B. J. Fraser, who recently was made assistant manager of the development and research division. **Donald J. Reese,** while continuing to head the iron and nonferrous casting section of the division, will also be in charge of its field sections. **J. W. Sands** has been appointed to head the section of engineering steels; **Dr. V. N. Krivobok,** stainless steels; and **T. N. Armstrong, Jr.,** railway and cast steels.

• **John G. Copeland, Jr.** has been appointed assistant superintendent of the Hercules, Calif., dynamite and ammonia plant of Hercules Powder Co. For the past 8 months, he has been assistant manager of the Hercules-operated Missouri Ordnance Works, Louisiana, Mo. He joined Hercules in 1936.

ADM. BEN MOREELL, chairman of the board, chairman of the executive committee, and president, Jones & Laughlin Steel Corp.

• **Adm. Ben Moreell** has been elected chairman of the board of directors, chairman of the executive committee, and president of the Jones & Laughlin Steel Corp., Pittsburgh, succeeding **H. E. Lewis** who has retired from these offices. Mr. Lewis remains as a director and a member of the executive committee. Admiral Moreell will commence the active performance of his duties with J&L on Mar. 17, but will continue as president of Turner Construction Co. of New York until June 1, and thereafter as a director of that company.

• **John M. Curley** has been elected president and **Lachland Mackenzie,** a vice-president of Eastern Stainless Steel Corp. of Baltimore. Mr. Curley, who succeeds the late Thomas F. McLaughlin as president, is also chairman of the board of the corporation, and president of the subsidiary, Industrial Steels Inc. of Cambridge, Mass. Mr. Mackenzie was previously assistant treasurer and comptroller of Eastern Stainless Steel.

• **William P. Neal** has been appointed assistant manager of the steel division of Mercantile Metal & Ore Corp., New York. Mr. Neal was formerly associated with the Jones & Laughlin Steel Corp., having served in the metallurgical division at their Pittsburgh plant. For the past 4 years he was engaged in the export department of J&L in New York.

• **Joseph E. Workman,** formerly assistant sales manager of the Latrobe Electric Steel Co., Latrobe, Pa., has been elected vice-president and manager of sales of the company, following the retirement because of ill health of **Arthur M. Morgan.** Mr. Morgan will continue as a director of the company. Prior to becoming assistant sales manager last spring, Mr. Workman was Chicago district sales manager for the Latrobe Electric Steel Co.

• **C. G. Carter,** 40-year veteran and chairman of the executive committee of the Liquid Carbonic Corp., Chicago, has retired. A director since 1932 and president of the corporation from 1939 to 1941, Mr. Carter will act as special consultant to the president of the corporation.

• **Dr. W. L. McCracken** has been appointed director of research and manager of alkali manufacturing by Detrex Corp., Detroit.

• **J. J. Mellon,** who has been associated with the Allen-Bradley Co., Milwaukee, for the past 2 years, has been appointed chief engineer of that company.

• **John D. Lodwick** has been elected vice-president in charge of sales of the pneumatic division of Curtis Mfg. Co., St. Louis, and **Harry C. Morrison** has been elected vice-president in charge of sales of the refrigeration division of the company.

• **V. E. McMullen** has been promoted to executive vice-president of the Cummins Engine Co., Inc., Columbus, Ind., and **R. E. Huthsteiner,** vice-president and general manager. Mr. McMullen, who has been serving as vice-president and general manager, joined the Cummins Engine Co. in 1935 as factory manager. Prior to his promotion, Mr. Huthsteiner was vice-president, assistant general manager and controller. He joined the organization as sales manager in 1942. **Leonard W. Beck** has been appointed general sales manager and **Waldo M. Harrison,** controller. Mr. Beck has been serving as acting general sales manager and manager of the company's central region. Mr. Harrison formerly held the position of assistant controller and materials manager.

• **C. D. D'Amico** has been appointed manager of the special steels department at the Los Angeles plant of Joseph T. Ryerson & Son, Inc. He is in charge of sales of alloy and stainless steels. Before joining Ryerson he served as chief metallurgist at the Joshua Hendy Iron Works, Sunnyvale, Calif.

• **N. D. Ely** has been elected vice-president and general manager of L. A. Young Spring & Wire Corp. of Chicago. Mr. Ely has been in charge of manufacturing since 1943 and was promoted to fill the vacancy created by the death of C. M. Young. **Thomas Couper,** general sales manager, and **Grant L. Cook,** general counsel, have been elected to the board of directors of the same organization.

• **Robert F. Vandenberg** has been appointed district sales representative in New York State for Hendrick Mfg. Co., Carbondale, Pa.

• **J. Benjamin Cowan** has been appointed plant manager of the Plasteel Products Co., Washington, Pa. Formerly associated with the Canonsburg plant of the Aluminum Co. of America, Mr. Cowan joined Plasteel, formerly known as Protected Steel Products Co., in 1945, as personnel manager. In 1946 he was made production manager, holding that position until his present appointment.

BENNETT S. CHAPPLE, JR., whose appointment as assistant vice-president of sales, U. S. Steel Corp. of Delaware, was announced in the Feb. 13 issue.

• **A. F. Swetish** has been appointed to handle problems involving manufacturing expense budgets and **H. L. Dingler** will handle production schedules and commitments on the manufacturing staff of General Motors Corp., Detroit. Mr. Swetish joined Fisher Body in 1925, was associated with Ternstedt Mfg. Div. from 1931 to 1940 and rejoined General Motors central office staff in 1942. Mr. Dingler joined Chevrolet in 1916 and in 1940 was named purchasing agent of the gear, axle and forge division of Chevrolet. In 1946, he was appointed general purchasing agent for Chevrolet Cleveland Div.

• **Charles S. Brown** has been promoted from assistant purchasing agent at Ford Motor Co. to purchasing agent for the Lincoln Div. of Ford, Detroit. He will serve under George W. Walker, director of purchasing for the Lincoln Div. **Frank B. Christian** will become purchaser of steel forgings for Ford. He joined Ford in 1927.

• **E. J. Leonard** has been appointed manager of the market analysis sales research department of Chevrolet Motor Div., Detroit. In 1942 he was stationed in Washington as assistant to R. H. Grant, then vice-president in charge of sales of General Motors.

• **Fred E. Harrell,** general works manager and a director, Reliance Electric & Engineering Co., Cleveland, has been elected manufacturing vice-president of the company. Mr. Harrell has been with Reliance since 1924 and was made assistant chief engineer in 1934, served as executive director of the company's Marine Div. plant during the early part of the war, became chief engineer of the company in 1943 and general works manager in 1945.

• **Fred L. Born** has been designated as sales representative in the Dallas district of the Carborundum Co., and he will succeed **William Crocker,** who has been transferred to the Houston area with headquarters in that city.

James Daar, who had been sales representative at Houston, has been transferred to a more immediate St. Louis territory.

• **James E. Fitzgerald** and **Harvey E. Zens, Jr.** have joined Udylite Corp.'s sales organization and are assigned to the Detroit office. Mr. Fitzgerald has been associated with Plymouth Motor Car Co., Nicolay Dancey and Howe Martz Glass Co. Mr. Zens has been with Dodge Motor Co., Carboloy Co. and Meier Brass & Copper Co.

• **D. R. Berg** has been appointed manager of the heating and combustion sections of Dravo Corp.'s machinery division, Pittsburgh. He first joined Dravo Corp. in 1938 and has held several supervisory positions, including assistant general mechanical superintendent and outfit superintendent of Dravo's Neville Island shipyard and administrative manager of the Wilmington, Del., shipyard.

• **James W. Birkenstock** has been appointed manager of the future demands department of International Business Machines Corp., New York. He was previously general sales manager.

• **Fred B. Croner** has been named assistant to Charles Guernsey, vice - president in charge of transit equipment of Marmon-Harrington Co., Inc., Indianapolis.

• **Max Ransch** has joined the engineering staff of Ethyl Corp., New York, as coordinator of engine development. **Harold Chalk** will be assistant coordinator. Mr. Ransch was formerly chief engineer at Cleveland Graphite Bronze Co.

• **Paul Weller,** effective Mar. 1, will become assistant director of the market research department of Wyandotte Chemicals Corp., Wyandotte, Mich. **Melvin E. Clark,** formerly in charge, will become a manager in the sales department of the Michigan Alkali Div. Mr. Weller has been an analyst in the market research department of Wyandotte Chemicals since 1945. Before joining Wyandotte he did engineering work for Goodyear Tire & Rubber Co.

• **M. V. Cornell** has been appointed sales manager of Marion Power Shovel Co., Marion, Ohio. Mr. Cornell has been associated with the company since 1938, in charge of sales in eastern Ohio and western New York state. He succeeds **Walter N. Westland** who recently resigned to join the sales organization of the Cummins Engine Co., Inc.

• **Arthur McCutchan** has been appointed senior research engineer of the product engineering and research department of Tube Turns, Inc., Louisville. He was associated for 20 years with the engineering division of the Detroit Edison Co. before joining Tube Turns, Inc.

• **John B. Perkins** has been made sales manager of J. H. Williams & Co.'s domestic tools division. He formerly managed the New York tool sales district. Mr. Perkins has been associated with J. H. Williams & Co. for over 30 years. He will make his headquarters in Buffalo.

• **William E. Herb,** eastern district manager, has been promoted to general sales and advertising manager of Gifford-Wood Co., Hudson, N. Y. **Walter G. Engler,** western manager, has assumed the position of eastern district manager, with offices in New York, and **William J. Chambers** has taken over as western district manager at Chicago.

• **John L. Lauritsen,** general manager of the J. B. Kendall Co., Washington, has been appointed director and vice-president. Prior to joining the organization a few years ago, Mr. Lauritsen had long been affiliated with the New York offices of Republic Steel Corp. **Mason B. Pebbles** has been appointed general manager and vice-president in charge of the company's warehouse in Norfolk, Va. Until recently, Mr. Pebbles was with the Kendall offices in Washington.

• **George S. Evans** of the Mathieson Alkali Works, New York, has retired from his position as metallurgist in charge of fused alkali products for the metals trade but will be affiliated with the company as consultant. **R. C. Strong,** who was made manager of the fused alkali division recently, will supervise Purite sales in the future.

• **D. C. Beaulieu** has been appointed manager of the newly created international division for export sales at Snap On Tools Corp., Kenosha, Wis., which will transfer its export department from New York to the home office.

...OBITUARY...

• **Horace P. Clark,** president of the H. W. Clark Co., Mattoon, Ill., died Feb. 7.

• **Joseph C. O'Brien,** chief engineer of the Pittsburgh Gear & Machine Co., Pittsburgh, which he helped found in 1915, died suddenly on Jan. 25.

• **Rowland W. Barr,** 47, manager of the dredge division of the Bucyrus-Erie Co., South Milwaukee. Wis., died Feb. 3.

• **Lars C. Thomsen,** 74, died recently after a short illness. He was president of the L. C. Thomsen & Sons Mfg. Co., Kenosha, Wis.

• **Thomas F. McLaughlin,** 55, president of Eastern Stainless Steel Corp., Baltimore, died Feb. 10. He had been assistant to the president of Crucible Steel Co. of America until 1944. Prior to that he had been operations vice-president of Rustless Iron & Steel Corp.

• **Richard S. Read,** 72, superintendent of melting department, Halcomb-Sanderson Works, Crucible Steel Co. of America, Syracuse, died Feb. 5. He had been working at Crucible Steel Co. for the past 38 years.

• **Albert C. Lange, Sr.,** 55, former president of Crucible Steel Casting Co., Milwaukee, died Feb. 3 after a long illness.

• **W. J. Graveson,** Atlantic Coast regional manager for Chevrolet with headquarters in New York, died Feb. 3 as a result of a heart attack. Mr. Graveson joined Chevrolet in 1923 and was appointed to his Atlantic Coast post in 1940.

• **E. J. Wagner,** 48, president of Superior Drawn Steel Co., Monaco, Pa., and president of Standard Steel Specialties Co., Beaver Falls, Pa., died suddenly Feb. 11.

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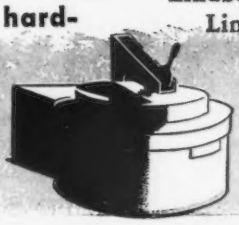


LINDBERG FURNACES

Dear Editor:

FATIGUE SPECIMENS

Sir:

In the issue of Jan. 18, 1945, p. 57, an article appeared describing a method of finishing Moore type fatigue specimens by continuous contact grinding to give a longitudinal finish. This type of specimen has been adopted here and considerable difficulty has been experienced in preparing the specimens by this method, due to burning and uneven grinding which apparently resulted from flexure of the specimen during grinding. The best results were obtained by grinding on a 60 grit Carborundum wheel, but this finish was unsuitable for our purpose and the method was abandoned in favor of profile grinding. It would be of great interest if you could supply information regarding some of the technical details of the process. . .

L. P. COOMBES
Chief of Division
Council for Scientific and Industrial Research
Commonwealth of Australia

● Brown & Sharpe Mfg. Co. who developed the grinding machines for preparing the Moore type fatigue specimens has furnished the following information covering the experience of a user of the Moore specimens: These samples are about 1/2 in. diam and 5 in. long with the 3 1/2-in. radius being formed into the work for a cordal distance of about 1 15/16 in. The samples are first rough turned on a lathe and the radius is formed by a special attachment mounted on the compound rest leaving about 0.008 stock for grinding. The ends of the piece are drilled and tapped to accommodate the fatigue testing machine and these tapped holes are countersunk about the distance of one thread in order to insure concentricity in grinding. When the pieces are hardened the tapped holes are filled with asbestos for protection. After hardening, the samples are pickled in pure sulfuric acid in order to break the scale. They are then ground with a 46 K-8 Carborundum wheel of 7 in. diam. The upright of the No. 13 B&S grinding machine is swiveled to a full 90°. The work speed is 120 rpm. The wheel is used and dressed until it is reduced to 6 1/2 in. diam at which time a new wheel must be substituted.

The grinding technique is a matter of experimentation as to downfeed of the wheel slide and stock removal. After being ground, the samples are polished with fine emery cloth in order to give the appearance of the lapped finish. Pieces from the grinding machine, however, have a fair surface finish and very little polishing is required. These samples after grinding are concentric within 0.0005 in.—Ed.

HIGH TEMPERATURE ALLOYS

Sir:

This office would like to obtain for its technical library a reprint of the article, "Alloys for High Temperature Service," appearing in the Nov. 7 and 14 issues. Information is desired as to your policy for providing reprints of articles from your magazine.

F. W. SIMPSON
Technical Library
Research Div.
U. S. Atomic Energy Commission
Oak Ridge, Tenn.

● We are always pleased to furnish our readers tear sheets or reprints, whichever are available, of articles in which they are interested.—Ed.

SHEET AND STRIP BREAKDOWN

Sir:

We have read your annual issue of Jan. 2 and were particularly interested in Mr. Campbell's summary of the past year and his forecast for 1947. We are interested in sheets and strip and wonder if perchance you have prepared a breakdown of these, showing the tonnage of sheets and strip used by the various consuming industries in the same years, 1939-46 inclusive, as you showed for all steel. If you have, would you please be kind enough to send us this information.

J. P. SANGER
Vice President
In Charge of Purchases
U. S. Gypsum Co.
Chicago

● We did not make a further breakdown of the tonnage of sheets and strip used by consuming industries. However, the American Iron & Steel Institute, 350 Fifth Ave., New York, has some such breakdown, with division of industries somewhat different from ours. This report is known as AIS-16 and can be obtained by writing direct to the Institute.—Ed.

FLY CUTTER HEADS

Sir:

I am trying to locate a manufacturer of fly cutter heads for use on die sinking machines. Tomkins-Johnson Co. has in the past manufactured a head, but I am advised has discontinued the line. The head in question was 4-9/16 in. overall width with provision to hold two bits or tools. I would appreciate it if you could provide a few new sources for a fly cutting head of this size.

GEORGE F. WEBER
C. D. Proctor Co.
New York

● Names of several manufacturers of all types of machine tool parts who may be able to supply the head are being sent to you.—Ed.

POWDERED IRON

Sir:

We would appreciate it if you would give us the names of manufacturers who might furnish us with cast iron in powdered form and who could also give us technical information as to how this material might be used in making engine valve guides. We have heard that this process is being used for making V8 Ford valve guides for all motors.

P. C. GREEN
President
Hub City Iron Co.
Aberdeen, S. D.

● Charles Hardy Co., 420 Lexington Ave., New York City, might be in a position to furnish the powdered iron you require. For information on the making of guide valves of the material we suggest you address your inquiry direct to the Research Dept., Ford Motor Co., Dearborn, Mich.—Ed.

INDUCTION HEATED BARS

Sir:

In scanning through "Newsfront" of the Nov. 12 issue, I noticed the mention of a new installation of electric induction heating equipment for cold-drawn and cold-finished steel bars. In the event that more pertinent information is available and sources can be disclosed, I would appreciate the receipt of such additional information so that I may more closely follow this new development.

R. A. PARSON
Staff Engineer
La Salle Steel Co.
Chicago

● Jones & Laughlin Steel Corp., Pittsburgh, has installed the induction heat treating equipment for heat treating cold-finished bars and we are forwarding a tear sheet from the Dec. 12 issue, of a short news story on the J&L process.—Ed.

REVERSED ILLUSTRATION

● The type lice slipped one past the proof readers in the issue of Feb. 6. The illustration shown in fig. 3, p. 62, should have been reversed.—Ed.

ELECTRODE CHART

Sir:

We would thank you to forward to us 20 copies of the "Comparable Arc Welding Electrode Chart."

J. M. KINABREW, JR.
Standard Supply & Hardware Co., Inc.
New Orleans

● Copies of the electrode chart are available at 20¢ each. Your copies have been forwarded.—Ed.

HUMOR FOR ENGLAND

Sir:

We have noticed in the current issues for 1946, a number of excellent cartoons which we think could be used very well on our staff notice board. Is it possible to supply us with these cartoons?

H. F. HALE
General Manager
Timmins & Foulkes, Ltd.
Dudley, England

● Assuming that you refer to "Bull of the Woods" which we feature regularly, we do not reprint these cartoons separately for posting but are sending you some recent pages on which the cartoons appear.—Ed.

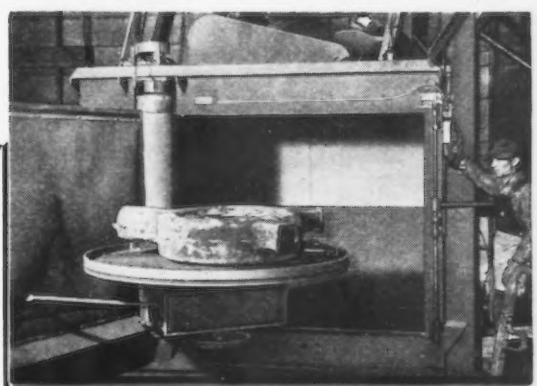
Airless WHEELABRATOR CLEANS STOVE AND FURNACE CASTINGS Faster... at less cost!

Industry by industry the airless Wheelabrator has proved its superiority for higher cleaning speeds, lower production costs, and more efficient cleaning . . . with the result that the list of users reads like a "Who's Who of Industry."

In the Stove and Furnace industry, leading manufacturers are Wheelabrating to improve the appearance and adherence of enameled, plated, and painted finishes. They have found that the Wheelabrator cleans faster . . . machining and grinding can be done more rapidly . . . there are fewer rejects due to breakage . . . inspection is simplified . . . and unit costs are substantially reduced.

See what the Wheelabrator will do for you. Ask for a demonstration of its cleaning power. Write for a descriptive catalog showing its operation, uses, and advantages.

Practically the entire production of the Premier Furnace Co., Dowagiac, Mich., is cleaned on this 66" Wheelabrator Swing Table.



TYPICAL USERS

Premier Furnace Company	Henry Furnace Company
Cleveland Cooperative Stove Co.	Round Oak Company
General Steel Wares, Ltd.	Prizer-Painter Stove Co.
Leonard and Barker Stove Co.	Detroit-Michigan Stove Co.
Tennessee Stove Works	Brown Stove Works
Atlanta Stove Works	Kalamazoo Stove & Furnace Co.
Marshall Furnace Company	American Stove Co.
Guelph Stove Company	Rudy Furnace Co.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

American

WHEELABRATOR & EQUIPMENT CORP.

(FORMERLY AMERICAN FOUNDRY EQUIPMENT CO.)

510 S. Byrkit St., Mishawaka, Indiana

Industrial News Summary...

- ***Steel Activity Reaches Wartime Pace***
- ***Shortages Seen Until June or July***
- ***Current Demand Stays at Peak Levels***

BY straining every piece of equipment and using all of the shortcuts learned during the hectic wartime peak periods, the steel industry this week set a new peacetime record with ingot operations at 94.5 pct of rated capacity, up one point from last week. Even with this high output, however, it may be June or July before the current tight situation in the majority of steel products can be relieved.

In its effort to raise output and make a hole in the unprecedented volume of unfilled steel orders, the industry is running into higher steelmaking costs. Marginal or high cost equipment is being utilized and outlandish prices are being paid for scrap, while at the same time unusual efforts to get the maximum amount of steel produced are costing steel firms more than would be the case if normal equipment were utilized and production reduced to a more economical level.

A check by some steel companies as to the position of their customers with regard to steel supply versus actual needs indicates no letup in demand for any type of products. Outstanding information shows further that the biggest headache among steel users continues to be unbalanced inventories. This situation is so severe in some manufacturing activity that production schedules are far below what they would be if a steady and balanced flow of component parts were possible.

SMALL manufacturing plants have been particularly hard hit by being unable to maintain high manufacturing rates and this situation has forced drastic curtailment of expenses, borrowing of additional capital and the elimination of programs designed to explore and exploit new markets.

The long-range viewpoint, however, which takes into account the fact that steel supplies will reach a more normal condition by summer, indicates that some of the present manufacturing difficulties will not last too long. It seems certain, however, that while steel users continue to clamor for material they will at the same time keep their attention sharply focused on the size of their steel inventories with later emphasis on control of finished manufacturing product inventory.

For steel firms there was little relief in scrap market conditions this week. While quoted prices in the various major markets were unchanged this week many steel producers continued to pay from $2 to $3 a ton more for material coming from distant points. Cross-hauling of scrap was increasing as many steel companies continued to compete for available material outside their own district. Some firms have delegated the search for additional scrap to their district men and customers are being closely contacted to make sure that production scrap is returned to the mills on the basis of steel shipments made.

For the past week or two there have been some rumblings in the scrap trade to the effect that a Congressional investigation might be made of current scrap conditions with emphasis on the unprecedented prices being paid. No official information has been forthcoming from Washington regarding such an investigation. By the time such hearings were completed basic changes might have already occurred in scrap prices. The current situation in the search for scrap which has raised the prices as high as $39 a ton in some instances is the direct result of a free market. Basic factors could produce a declining scrap price trend just as quickly as prices have skyrocketed over the past month.

WHILE the steel industry is doing everything possible to alleviate the freight car shortage by stepping up steel shipments to freight car builders, it is obvious that any steel tonnage over and above what has been shipped for new freight cars must be at the expense of other steel consumers. The greatest scarcity in the car shortage today involves box cars and conditions at present are closely approximating those which occurred in the most confusing wartime periods.

Steel scarcities in hard-to-get steel items exist primarily in bona-fide steel distribution channels. Substantial supplies other than governmental surpluses are allegedly available from other sources, but so many uncertainties surround this market that most consumers refuse to participate. These twilight markets which are carryovers from the OPA black markets are still utilized by steel consumers who are up against it for a marginal amount of steel requirements.

CONSIDERING steel purchasing on the whole, fly-by-night steel deals with their double and sometimes triple prices are only a small proportion of total transactions. Furthermore the sad experiences of some steel consumers who have had dealings whereby they have been forced to pay unusually high prices and not always get what they thought they were buying have caused a tendency to steer clear of such sources. The general trend today is away from premium markets and there has been a definite decline in some of the twilight market prices. Heaviest activity in these markets involves flat-rolled material.

The tendency of many steel firms to withdraw from remote areas in the sale of their products continues. Some firms have already notified customers at distant points they cannot accept any more orders for hot-rolled sheets, at least for the time being. These trends are the result of steel companies having overhauled their sales practices with emphasis being placed on realistic selling. Whether or not such methods will withstand the rigors of a buyers' market remains to be seen, but a strong effort will be made by most firms to retain present selling methods.

• **STEEL PAYROLLS**—Payrolls distributed to employees in iron and steelmaking plants in 1946 set a peacetime record at $1,544,142,000, according to the American Iron & Steel Institute. The 1945 war year totaled $1,645,332,700. Average hours worked per week during 1946 for all employees fell to 36.1 from 44.2 in 1945. Hourly, piecework and tonnage wage earners of the industry received $1,208,259,000 during 1946, compared with $1,351,461,600 in 1945. Hourly earnings of wage earners only during 1946 averaged approximately 134.7¢ pr hr, a record, compared with an average of 124.8¢ per hr in 1945, 95.9¢ pr hr in 1941, and 84.2¢ per hr in 1939. The average number of employees in 1946 totaled 575,300, compared with 551,200 average employees in 1945. In November, average hourly earnings for steelworkers hit the high figure of 136.7¢, and total number of employees hit the peacetime record level of 600,000. In December, the effects of the second coal strike of the year reduced total payrolls to $137,216,500 from $143,440,700 in November. Average number of employees dropped to 594,200 from November's 600,000, and average hours per week per employee declined to 36.5 from 38.7 in November.

• **SCRAP DRIVE**—One large steel producer last week furnished each of its salesmen with printed forms and instructions concerning the acquisition of scrap from its customers. The instructions define the types of scrap, how it should be prepared, etc. The salesman must solicit every customer on his list. The customer will be asked to earmark the scrap in proportion to what new products he receives from this particular mill. It was plainly implied to the salesman that if the consumer does not comply he may find his quota for new steel suddenly decreased. If the consumer ordinarily sells his scrap to a dealer, broker or anyone else, the salesman will insist that such scrap be definitely consigned to the producer he represents.

• **MAGNETIC ALLOY**—A new 35 pct Co., 64 pct Fe, and 1 pct Cr alloy that carries more magnetism than any other alloy practical for use in motors and generators and is tough enough to withstand intense vibration has been developed at Westinghouse Research Laboratories. The alloy is hot rolled and then rolled as it cools or is quenched, a processing method that Westinghouse said eliminates brittleness in the final product. Westinghouse is building a small rolling mill to handle production of the alloy.

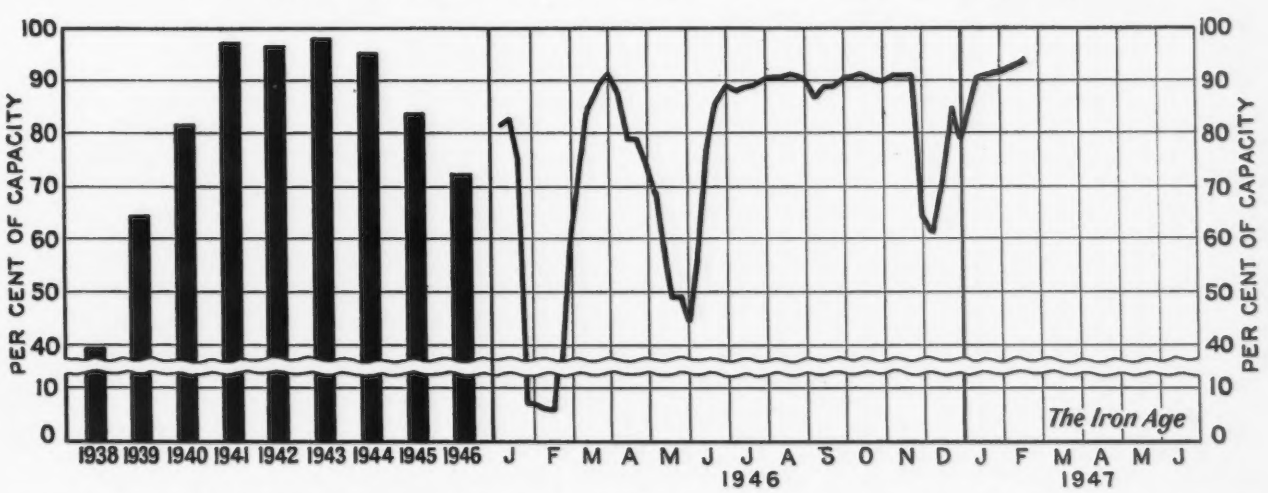
• **BRITISH STEEL OUTPUT**—Fuel cuts which became effective in the middle of January have failed to appreciably affect that month's steel output in the United Kingdom. Fuel stocks in the mills when the cuts were applied were generally estimated at 8 to 9 days, and as a result the reduction expected to be brought about by the curtailment of fuel supplies will presumably be reflected in February production statistics. United Kingdom steel output for January this year totaled 1,342,800 tons, compared with 1,280,100 tons for the same month last year, and pig iron production amounted to 840,500 tons last month, compared with 804,100 tons in January 1946.

• **FORD'S BRITISH EXPORTS**—Ford Motor Co. Ltd. produced a record number of vehicles and tractors for export from Britain last year. The 1946 export figure for the entire British motor industry totaled approximately $200 million, Ford's Dagenham factory contributing $35,240,000 towards this total. At the present time 50 pct of the Dagenham car production goes overseas, and the remainder to the British home market.

• **STEEL OUTPUT SETS RECORD**—January steel production set a peacetime record, totaling 7,234,187 net tons, according to the American Iron & Steel Institute. This represents an average operating rate of 93.3 pct during the month. Of the January total, openhearth output represented 6,560,118 net tons, or 95.3 pct of capacity, bessemer converters operated at 87.7 pct of capacity and produced 384,213 net tons of steel, while electric furnaces averaged 67.2 pct of capacity to produce 289,856 net tons. The operating rates are based upon Jan. 1, 1947 annual capacities as follows: Openhearth 81,010,990 net tons, bessemer 5,154,000 net tons, electric 5,076,240 net tons, or a total of 91,241,230 net tons.

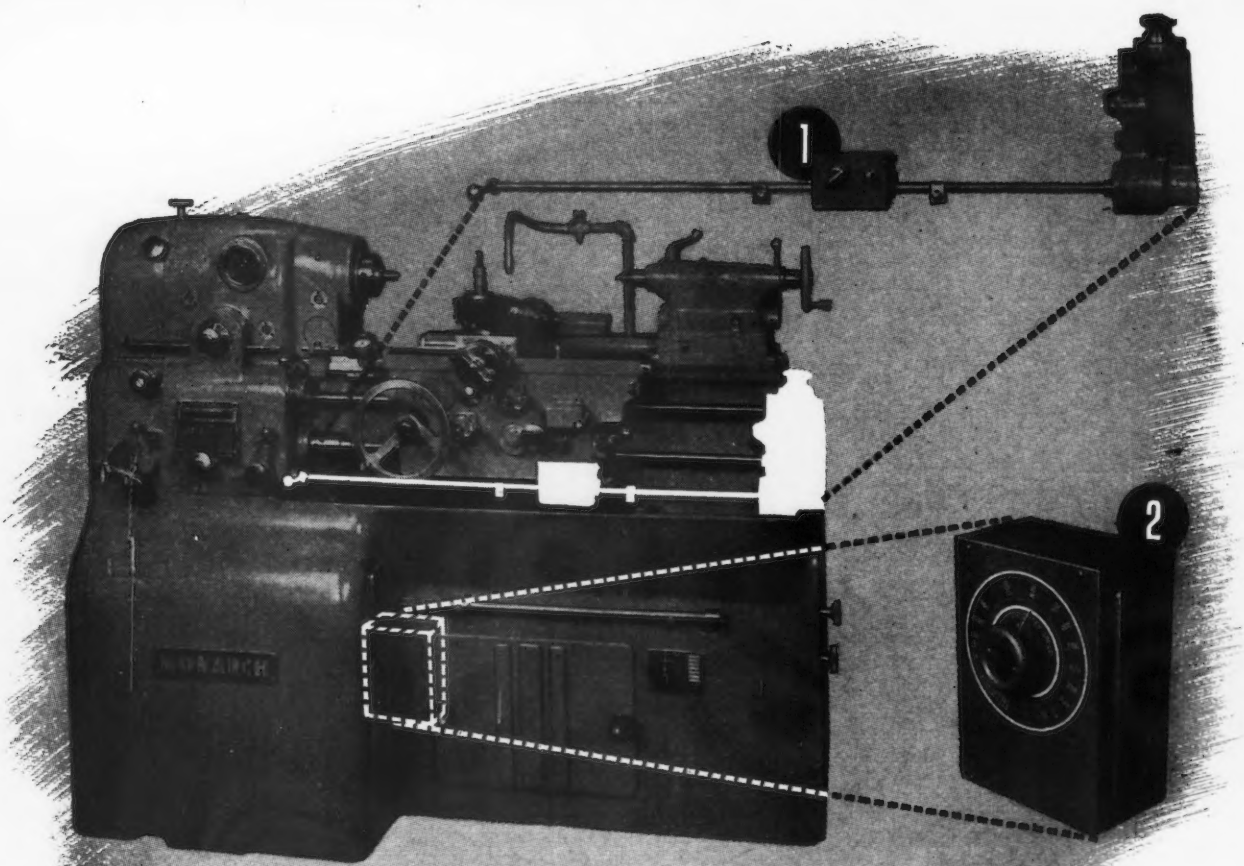
• **LARGE CAR ORDERS**—During the first 6 weeks of this year the Pullman-Standard Car Mfg. Co. has received orders for 7775 freight cars. This figure averages five times heavier than the rate of new orders received during the year 1946. Of the new cars ordered, 5450 will be of the box car type, 2325 of the open type variety. The total freight car bookings for the company in 1946 totaled 13,869 cars, of which only 3035 were placed during the first 6 months of the year. Pullman reports that their present unfilled freight car backlog is 21,700 cars.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
February 11....	96.5*	92.5	92.0	93.0	97.0	96.0*	85.0	99.0	102.5	99.0	102.0	76.0	95.0	93.0
February 18....	101.0	92.5	91.0	90.0	97.0	104.0	100.0	99.0	102.5	98.0	106.0	73.0	95.0	94.5

* Revised.



TWO REASONS WHY you can chase threads UP TO 50% FASTER on a MONARCH

1—ELECTRIC LEAD SCREW REVERSE for chasing either external or internal threads. Users have found it particularly valuable for internal threading of blind holes. Its outstanding superiority is the direct result of two features exclusive in the Monarch design. First, work rotation automatically stops at the end of each cut. Second, the mere twist of a convenient knob adapts the mechanism to chase either right or left-hand threads—or makes it inoperative, for greater operator safety when gauging or loading and unloading the workpiece.

With the electric lead screw reverse you'll be able to chase more accurate threads—*and you'll be able to do it faster.* The flip of one lever reverses the entire machine, returning the cutting tool to its starting position for the next cut. You can maintain perfect timing between the tool and the work. Automatic stops are provided in both directions of travel.

2—VARIABLE REVERSE SPEED CONTROL mounted on the rear of the machine gives even greater speed in the operation of the electric lead screw reverse. With this control you can preset the reverse speed of the driving motor to *greatly accelerate* the return of the threading tool for the start of the next cut.

This is an exclusive Monarch feature—one that has enabled users to reduce floor-to-floor times by as much as 50 per cent on the longer threads.

These two exclusive Monarch attachments are typical of the many extras available on the Monarch 10" EE Sensitive Precision Toolmaker's Lathe—features designed to make the base machine exactly suited to your individual work requirements.

Regardless of the nature of your metal-turning needs, Monarch is ready with the latest designs, to give you *peak production at a profit.* May we talk it over?

ACCURACY · ECONOMY · LONG LIFE

Monarch TURNING MACHINES

THE MONARCH MACHINE TOOL COMPANY • SIDNEY, OHIO

Scarcity in Bona Fide Channels Supports Fly-By-Night Steel Deals

But Trend in Distress Buying Seen Slowing Down With Total Volume Small

o o o

By D. I. BROWN
Chicago Regional Editor

o o o

Chicago

• • • **The only scarcity** that actually exists today in hard-to-get steel items is through the usual bona fide channels. Substantial supplies, other than government surplus, are allegedly available from other sources but so many uncertainties surround this market that most consumers refuse to participate, according to those who are familiar with this never-never-land.

Manufacturers who have given up hope of obtaining raw material from the regular mills or warehouses have in cases been forced to deal with a new source of supply—the self styled steel broker. During the period of OPA such practice was clearly illegal because of high prices and the risk was such that only in extreme cases were these new sources used.

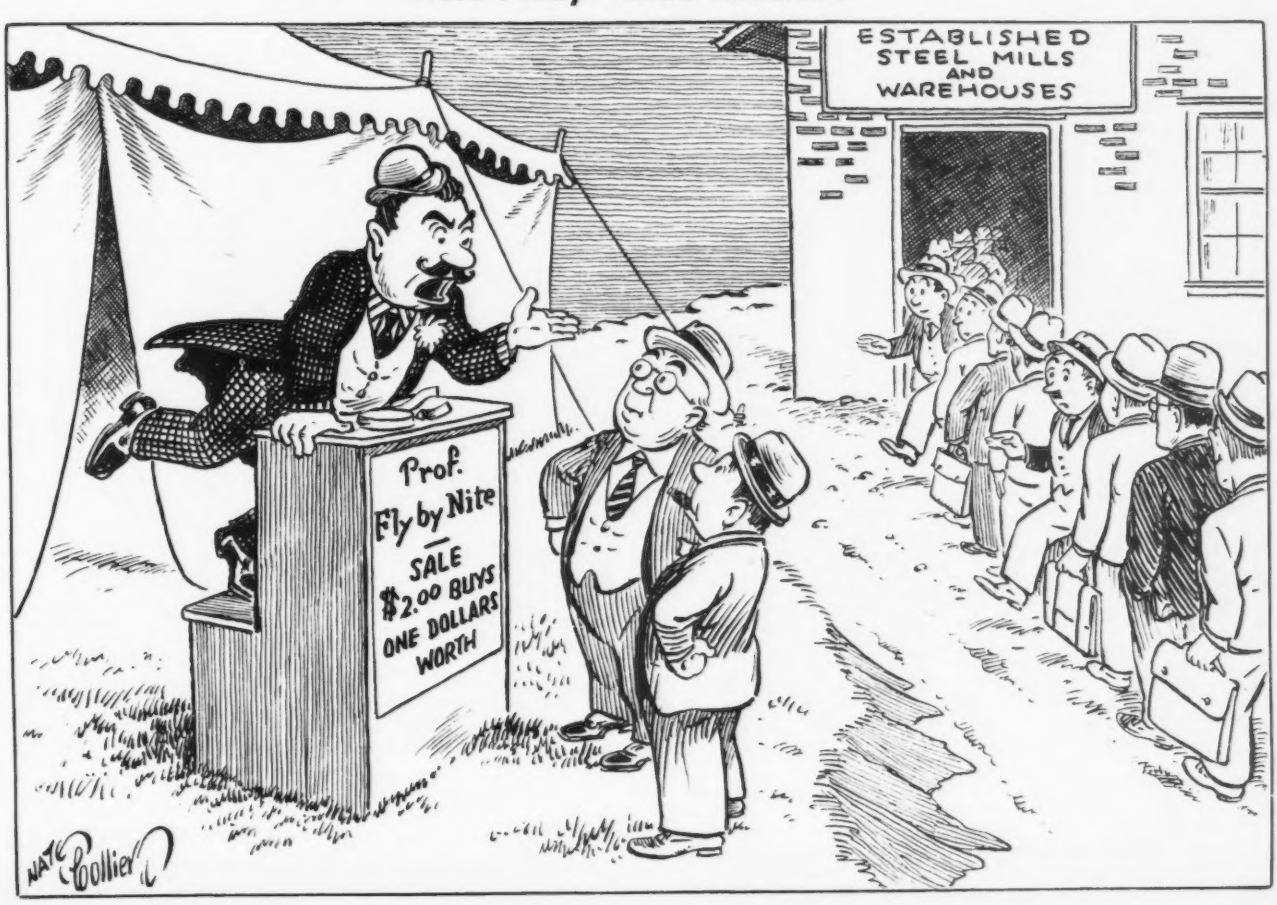
Because of continued high demand, buying from individual opportunists has continued. The prices are stiff, delivery is often never made and quality of product has often been misrepresented. At the moment, going prices in this market are falling off and a desperate buyer is no longer forced to pay the broker's commission until the material is shipped.

All during the current steel shortage delivery of all types of sheets and other scarce items could be had if the buyer could afford the price and gamble on the integrity of the man who professed to have the right connections. The total tonnage moved has been small compared to the country's total steel production.

However, to steel hungry consumers the 10,000 tons of cold-rolled sheets which were available for immediate shipment in Cleveland last November, or the similar tonnage which could be had out of a Pittsburgh warehouse in December, seemed very large at the moment. Generally the prices at that time varied from $220 to $260 a ton f.o.b. any large industrial center and included the broker's commission.

Under OPA such deals employed an intricate procedure in-

Here Today—Gone Tomorrow



volving at least four parties so as to successfully circumvent the law. Funds were deposited in a bank, which could only release payment on receipt of shipping notices, was one of the twists. Two payments were usually made, one to the shipper at OPA ceiling price and the balance to a trusted confederate of the seller who eventually turned over the cash to the selling agent and earned a slight fee.

With the removal of price control everything is allegedly out in the open. The broker's commission is paid direct, with the orders, invoices and payments going through the producers hands at established mill prices. Many consumers who have of necessity dealt with such individuals report that they must supply an irrevocable letter of credit but that the broker's credit cannot be ascertained. Organizations who have tried to establish the integrity of such brokers have been able to find out very little about such men, except that they are known to other responsible people, whose opinions vary widely concerning their character.

Consumers who have been fortunate enough to receive delivery of the high priced products through these devious channels say that the quality of product is not always good. One organization which ordered sheets of a given gage and dimension received 90 pct wrong gage and very few sheets and most of the cars contained sheet trimmings. Two companies in Chicago, on the other hand, declare that their deliveries have been in every respect prime product.

As steel mill and regular warehouse deliveries become firmer, the broker business will diminish, and already the price and terms of contract have started to ease. During the week of Feb. 10, one Chicago manufacturer was offered any type of sheet, including vitre enamel, at $182.50 a ton providing the minimum tonnage was 1000 tons and the customer would accept shipment within a week.

This offer contained no prepayment strings but was offered on a sight draft basis. This condition is much better than just a month ago, when the brokers were demanding one dollar a ton payment in advance and a balance of $2.00 a ton commission at time of shipment.

Other going prices in this subversive market are dropping. Copper bearing, galvannealed sheets, 20 gage by 48 by 120 in., were offered last week at $172.50 a ton in Chicago on a sight draft basis. This included broker's commission, all extras and the sheets could be specifically ordered stretcher leveled. Tin plate, from 31 to 35 gage, formerly costing $250 a ton is now reported available in 25 ton lots at $200 a ton f.o.b. Pittsburgh. Available for immediate shipment last week, according to one broker, was 6600 tons of 53 to 58 silicon steel transformer grade sheets at $305 a ton.

The material handled by the brokers has very seldom been sold direct by large mills. Due to trading of scrap for steel products, or other well known deals, whereby consumers, manufacturers and producers are forced to bargain in products, the items end up in the brokers' hands and are thus made available.

During the war many industrialists became acquainted with the politicians in Washington and became familiar with their methods of business. Conversely, the politicians discovered a new field undeveloped from a purely political aspect. With the end of the war came the mass exodus of these industrialists and politicians from Washington to their former businesses. Some of these individuals, indoctrinated with a new concept and with powerful new connections through their Washington experience, have emerged as successful entrepreneurs of scarce steel products.

A former official of the State of Michigan can now be instrumental in procuring sheets at $175 a ton. The previously mentioned offer of 1000 tons of sheets (any kind) for delivery within a week comes through another ex-official of the same state, according to his representative now touring the Chicago area.

On the whole, the companies who have used this irregular pipeline of supply report they are not too satisfied with results. Some have had to resort to legal proceedings to regain the sums they were forced to advance for steel they never received. Others complain of broken promises and actual shipments of inferior products. Many dislike the clandestine arrangement wherein they cannot determine the source of product or the reliability of their suppliers. A lot of steel hungry consumers who have investigated the various propositions offered have found too many angles involved and have washed their hands of

BEFORE AND AFTER: *The great stack of 18 World War II low pressure oxygen tanks at left can now be replaced in American combat aircraft by the small liquid oxygen converter at the right of the picture. Using the converter, developed by Bendix Aviation Corp. and the AAF, crews were able to stay at 40,000 ft for periods up to 6 hr.*

the whole idea as they refuse to deal in black markets.

Some of the steel brokers have found that in plying the trade they end up with quantities of scrap which can be traded for new product. Here again steel producers are not always directly involved. The one broker, who early in January canvassed Chicago trying to trade an alleged million ton of scrap originating from a ship breaking program, found no takers, although representatives of two large mills were interested enough to listen to the proposition.

In cases it has been found that the broker's entree to the selling of sheets is possible because he has made available to him quantities of slabs or sheet bar. By acting as coordinator between a mill rolling more semifinished than it can handle, and a sheet hungry consumer, the brokers have been able to consummate a mutually satisfactory agreement. Such arrangements hinge on the broker or the consumer finding a mill which will consent to convert the semifinished products into sheets. In the heavier gages, and wider widths, this obstacle has not been found to be insurmountable.

Automotive Metallurgists To Address ASM Group

Detroit

• • • **Three Detroit** metallurgists and engineers will appear on the technical program of the American Society for Metals to be held in Oakland, Calif. Civic Auditorium March 24 to 27.

A. L. Boegehold, head of the metallurgy department, research laboratories div., General Motors Corp. and national president of ASM will describe the Correlation of Recent Data on Hardenability.

Walter Jominy, engineering division, Chrysler Corp. will discuss the Hardenability of Steels.

Methods of Combating Fatigue Failures will be described by J. O. Almen, head of metallurgical engineering department, research laboratories division, General Motors Corp. Mr. Almen will give two lectures at the ASM West Coast meeting.

Argentine Government Seeks Pipe, Equipment For 1100-Mile Pipeline

Pittsburgh

• • • **A commission from** the Argentine Government Gas Service Dept. is now in the United States to purchase, among other things, an 1100-mile 10¾-in. gas pipeline, which will be laid from Comodoro Rivadavia oil and gas fields to Buenos Aires. The entire pipeline project, it is anticipated, will cost about $25 million, while the pipe itself is expected to amount to $10 to $12 million.

The project is being planned for an initial daily output of 21 million cu ft of gas. It is hoped that work can be started during the first half of this year. If it is not possible to procure the pipe and related equipment in this country, the commission plans to go to Europe next month to investigate the possibilities of getting what is needed from such countries as England, Belgium, Switzerland, France or Italy.

Other items and equipment sought by the commission, which consists of Teofilo M. Tabanera, chairman and chief engineer, Juan B. Siri, engineer, and Abel O. Malvestiti, secretary, include 120,000 ft of 6-in. OD black steel standard pipe; 300,000 ft of 4-in. OD black steel standard pipe; and 700 miles of 1-in. standard galvanized steel pipe. The commission also wants to buy compressor sets and valves for the line, and miscellaneous water heaters and cookers for domestic use in the areas adjacent to the new pipeline.

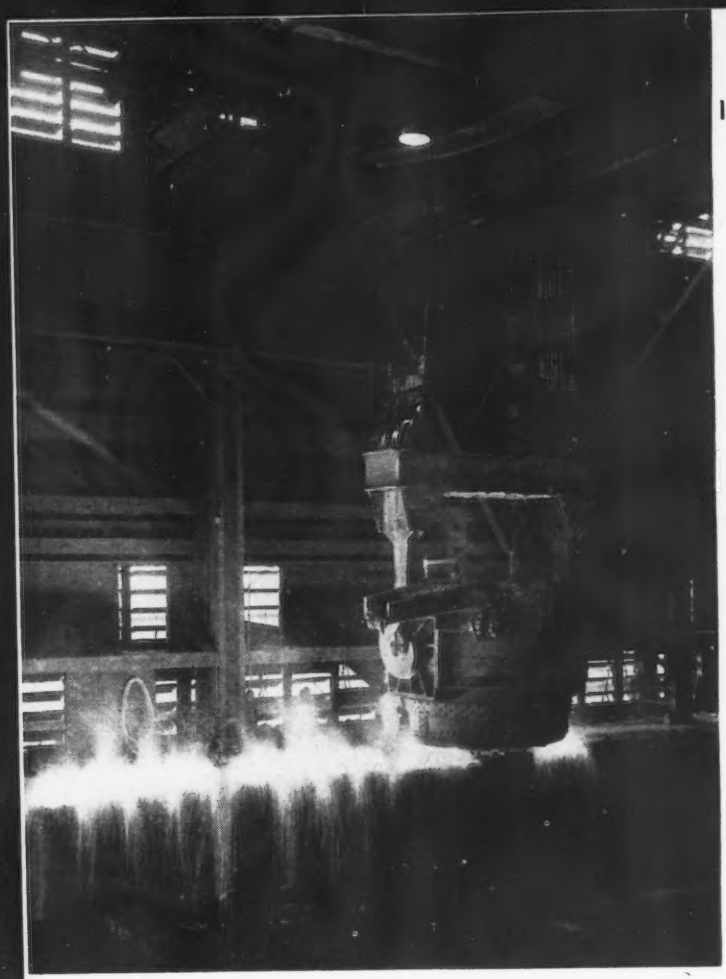
B & W Keeps Export Extra

Beaver Falls, Pa.

• • • **Babcock & Wilcox Tube Co.,** Beaver Falls, Pa., advised that the 10 pct export premium announced to the trade on Nov. 15, 1946, on seamless carbon steel boiler tubes and on Dec. 26, 1946, on welded carbon steel boiler tubes will apply to the present increased list prices. Apparently this is not a uniform extra on export sales of these products, but is arbitrary with the various producing companies.

WHITE TIE AND CUPOLA: *Here one sees Robert E. Lee, whose place of business is a Detroit foundry. The tail coat and trousers were acquired by Mr. Lee some years ago for a function which failed to function — so he wears them working. A tall silk hat is de rigueur outside the foundry.*

Major Steel Producer Clarifies



GOOD RIMMING ACTION: *The steel consuming trade has found that it is impossible to intelligently understand the new price extras without getting technical. The recent revision and clarification of merchant bar quality carbon steel by the producers is timely, and is being found most helpful to steel users.*

Chicago

• • • **In order to** clarify any confusion and because of the objections raised by some consumers concerning the recent price extras and method of application, one large producer has mailed all of its customers a lengthy letter revising its pricing policies on hot-rolled carbon bars. The main revisions regard merchant bar quality, and the application of the silicon extra which had been very definitely based on precise chemistry, metallurgical and size requirements. (THE IRON AGE, Jan. 16, p. 104.)

The revisions are decidedly less restrictive in nature so that it is now possible to buy garden variety carbon steel in a wide range of sizes on a simpler basis. As a large portion of all carbon bar tonnage produced is MBQ the changes affect practically every consumer of steel bars. The farm implement makers were one of the industries most severely penalized under the first set of rules and they now report they are much more satisfied with the new price policy.

In the past week consumers have had reason to examine the definition of MBQ in order to determine how much of their requirements could be so classified. The only reliable reference appeared in the Jan. 1947 issue of the AISI Steel Products Manual, section 8, part 3, page 29, which adequately covers most applications. Briefly, the mills define this quality as applicable only to bars used in miscellaneous application, for limited fabrication, and of no special soundness or surface requirements, with the exception of the steel used for structural purposes.

The new extra policy is thus markedly different than that announced in January and first revised a few weeks later wherein any section over 3 in. or equivalent cross section, had to be ordered silicon killed and further, all steels over 0.65 carbon max, regardless of section, were in the same category. (THE IRON AGE, Jan. 23, p. 99.) The producers still strongly recommend that orders be entered as originally suggested, but they will now accept orders in MBQ falling within the limits which were formerly considered an infraction of the rules. They say, however, that their responsibility under such conditions is limited and that such procedure may be at the risk of the consumer. This means that if a part is rejected because the bar stock was seamy or unsound, the customer cannot expect the mill to replace the tonnage.

Actually the only quality guarantee the mills will make in MBQ carbon bars is that the stock shall be free of open pipe. The exact limits of a mill's responsibility have not yet been defined but producers report this will be settled when and if customers enter claims. Many consumers report that they will continue to go along with the producers' recommendations as past experience has proved that such suggestions were for their own benefit and justifiable in every respect. Others, who are more price conscious and of firmer individual opinion, report they will order MBQ wherever possible and that the decision will rest wholly within their own organization.

The new explanation of extras also contends that steels containing over 1.05 pct manganese should not be ordered as MBQ, as popular use of such steels demands a higher quality product to satisfactorily do the job. The standard bar shapes in MBQ, which are now acceptable to the mills, are taken with the provision that such products are not subject to check analysis.

Check analysis, as defined by the new manual, means analysis of the metal after it has been rolled or forged. In other words, these steels will be sold to ladle analysis only and if a consumer wants checks he might get them, but checks outside the standard chemical limits for the steel involved are not cause for rejection. There is, therefore, no control of chemical segregation in this quality. If a consumer wants to buy a recognized mechanical property specification, such as ASTM, which requires checks on phosphorus or sulfur content the mill will only accept such orders if the phosphorus and sulfur checks are waived.

Test reports will be furnished under such conditions. However, no mechanical properties more restrictive than standard range are acceptable. As was the former practice, the mills report they will

"Merchant Bar Quality" Extra Charges and Applications

not accept orders for complete chemistries plus specified mechanical properties. This applies to any quality, and MBQ is no exception. Variations of this practice are possible as the mills will still accept an ASTM specification to standard mechanical property ranges wherein the manganese, phosphorus and sulfur are specified but carbon content is left opened.

Other features involving standard and non-standard steels have been clarified and the mill definitely states that when MBQ is ordered no chemical ranges more restrictive than standard or any residual alloy limitations will be accepted or reported. It is now possible to specify silicon limits up to 0.10 max in MBQ, and grain size restrictions are naturally ruled out. Orders specifying annealed or normalized MBQ carbon bars are now satisfactory to the producer, but only if no other restrictive specification is included.

Other qualities in carbon bars such as special bar quality killed steels are governed by end use and separated into killed, and killed or non-killed classifications. The application of all the qualities for purposes not specifically outlined in the new instructions are subject to the rules of AISI Steel Products Manual, section 8, which will cover special restrictive requirements with decisions again subject to end use or customers' processing of the bars.

Most Consumers of Steel Bars Expected to Find Costs Are Somewhat Lower

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The producers state that in order to clarify their position with respect to silicon limitations, they have advised their customers of the permissible silicon limitations for the standard steels appearing in Table I of the all important new manual. These are as follows:

Grade	Extent of silicon specifications
C1008 to C1012	No specification limit or 0.10 max
C1015 to C1095	No specification limit or 0.10 max or 0.10 to 0.20, or 0.15 to 0.30

They report they have further tabulated the silicon limitations for resulphurized openhearth carbon grade. From the above it is evident that the lower carbon grades will usually be made in open or semi-killed types, and that up to and including file steel the consumer can get such bars made by all the ordinary deoxidation practices. The exceptions, however, are many as end use determines the limits to which the consumer can order.

To some consumers the fuss over MBQ and the extensive efforts made by producers to clarify things is not justified. These plants report that they use little of this quality, however. To the large tonnage buyers the money that can now be saved is deserving of attention.

The latest effort on the part of the producers, competent observers say, are a sincere attempt to give the consumer every possible break in price extras without jeopardizing the responsibility of the producer. On the whole consumers report that they are in agreement but it will be a few weeks before they are certain that all the former inequalities have been removed.

Cold drawers on the other hand state they are concentrating on the fine print only, as the first changes, which were major, exhausted their pricing personnel to such an extent that a conservation of time and manpower is imperative.

Economy of Argentina Reported Anchored To Near Postwar Levels

Chicago

• • • **Argentina, according** to Luther Turner, South American manager for the automotive section of Borg-Warner International Corp., who has recently returned from South America, is the one port of economic calm amid raging inflationary storms in the surrounding countries. The wave of high prices loosed upon other "good neighbor" nations, mainly by U. S. wartime spending, has been halted at Argentina's door by the drastic financial policies of the Peron government.

While Brazil, Chile and other South American countries wallow in high living cost up to as much as 140 pct above 1940, the Argentine economy has been anchored to near prewar levels, Mr. Turner said. Argentina's firm position, Mr. Turner said, is due principally to rigid price control and particularly to the government system of buying domestic manufactured goods and raw materials at fixed prices, then selling them at profits as high as 100 pct in the world markets. These profits are converted into public funds used for education and building purposes. The Borg-Warner executive who has had 20 years experience in South America, believes other veteran American export men on that continent share his impressions that President Peron himself is sincerely eager to improve both Argentina's trade and political relations with the United States.

Mr. Turner believes that American manufacturers should capture a substantial share of South American foreign trade in the coming year. He pointed out, however, that most of our manufacturers are doing less well than they should, because of failure to analyze the South American market with the same thoroughness, and expenditure of money and personnel that is now employed in analyzing the domestic market. He drew attention to the fact that 9 out of 10 U. S. manufacturers export only through commission houses, who in turn deal with local native representatives who "are interested only in getting orders." These representatives sell the jobbers, retailer and directly to consumers at the same price and officials and representatives of the American firm very seldom set forth on the soil of the foreign country with whom they deal.

All Priorities on Steel Products Will Terminate on Mar. 31

Washington

• • • **The issuance of all** priorities on steel products, including those for housing, will terminate on March 31. This action, forecast by THE IRON AGE (Jan. 16, p. 103), was announced by CPA at a meeting of the Steel Products Industry Advisory Committee on Feb. 13. A decision on the retention of the certification plan for pig iron is expected this week. Informed sources here say the program will be continued in a modified form.

Under the law, CPA's priorities powers expire on March 31, but those of the Office of the Housing Expediter continue until Dec. 31, 1947. Frank R. Creedon, Housing Expediter, has stated that he has agreed to termination of housing priorities before the legal expiration date because the steel industry has given assurances that approximately 306,500 tons of steel will be made available for housing products in the second quarter and additional amounts will be forthcoming through the remainder of the year. He emphasized, however, that if the housing program bogs down under the voluntary plan, directives will be issued to cover steel needs.

Steel Firms Agree to Supply Second Quarter Housing Needs Voluntarily

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The 306,500 tons is expected to provide sufficient steel for about 300,000 homes in the second quarter. Included in this tonnage is a sufficient quantity of steel (40,000 tons) to permit the production of approximately 4,000 steel prefabricated houses. Sheet and strip account for practically 90 pct of the total second quarter steel needs.

The first quarter priorities program for housing called for 295,200 tons of steel, as compared with 231,000 tons in the fourth quarter 1946.

Members of the steel products advisory committee readily endorsed the voluntary plan, according to CPA, and indicated that steel for housing products would be available during the remainder of the year as readily as it was under the old formal priorities set-up.

Steel Requirements for Critical Housing-Type Items
Thousands of Tons of Steel

	Certifications		2nd Quarter Actual Requirements	Average Quarterly Requirements April–Dec. 1947[a]
	4th Quarter 1946	1st Quarter 1947 (As of Jan. 31)[a]		
Bathtubs	9.6	9.4	12.0	11.0
Lavatories	0.8	1.9	1.5	1.5
Furnaces, floor and wall	[b]	14.2	13.0	11.0
Furnaces, warm air	69.4[b]	48.9	44.0	44.0
Jackets and casing	[b]	10.7	12.0	12.0
Furnace pipe fittings and duct work	22.8	21.9[e]	22.0[e]	20.0[e]
Low pressure heating boilers	18.9	24.4	28.0	30.0
Radiation	6.7	7.9	8.0	8.0
Registers and grills	5.7	6.7	7.0	6.0
Electrical service equipment	.....	13.1	14.0	13.0
Electrical wiring services	30.8	29.4	31.0	34.0
Builders hardware	25.6	25.9	30.0	32.0
Steel door frames	.....	7.9	8.0	8.0
Window sash and frames	.....	26.0	26.0	26.0
Prefabricated houses, panels and sections	6.7	17.3	40.0	[f]
Sinks	8.2	6.4	.....	[g]
Undersink cabinets	26.0	23.2	.....	[g]
Total	231.0	295.2	306.5[d]	309.5[e]

[a] First quarter 1947 requirements were seasonally adjusted. This accounts for differences between 1st Qtr 1947 certifications and Av. Qtr 1947 requirements for remainder of year.
[b] Warm air furnace certification for fourth quarter included provision for floor and wall furnaces and for jackets and casings.
[c] Excludes 10,000 tons per quarter estimated to be supplied by warehouses to local prefabricators.
[d] Including 10,000 tons estimated to be supplied by warehouses to local prefabricators.
[e] Includes prefabricated housing requirements and 10,000 tons to be supplied by warehouses as noted in [d].
[f] To be presented by Housing Expediter.
[g] No special assistance requested.

Bid Made for Pipelines By Texas Co. Accepted

Washington

• • • **WAA Administrator R. M.** Littlejohn recently announced that he had accepted the bid of $143,127,000 made by the Texas Eastern Transmission Corp. for the Big and Little Big Inch pipelines for use in transmission of natural gas to the Eastern Seaboard.

Final consummation of the sale, however, is subject to the approval of the Dept. of Justice and the Federal Power Commission. It is expected that the decision of the Attorney General will be made known with a week or 10 days.

Original cost of the pipelines was approximately $146 million. The Texas Corp. will pay cash on receipt of the quit-claim and hopes to take over operation on May 1, when the present interim lease expires.

It is anticipated that conversion to gas transmission will require investment of an additional $40 million. The contract will include a recapture clause permitting the government to take over in the event of war or a national emergency. The company will provide for maintenance in a standby condition the oil pumping stations and equipment.

E. Holley Poe of New York City, president of the corporation, submitted the bid for the Texas successful bidders.

Buys Armor Tank Plant

Washington

• • • **A $2 million** cast armor tank plant in Pittsburgh has been purchased from WAA for $488,340 by the Blaw-Knox Co., the wartime operator. The Union Steel Casting division of the firm expects to employ about 700 workers in the production of castings for peacetime commercial use. Production capacity for cast armor for tanks was rated at 1,500 tons monthly.

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1947

Based on Reports by Companies which in 1946 made made 97.6% of the Open Hearth, 100% of the Bessemer and 85.8% of the Electric Ingot and Steel for Castings Production

Period	Estimated Production—All Companies								Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL			
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
† January	6,560,118	95.3	384,213	87.7	289,856	67.2	7,234,187	93.3	1,632,999	4.43
February										4.00
March										4.43
1st Quarter										*12.86*
April										4.29
May										4.43
June										4.29
2nd Quarter										*13.01*
1st 6 Months										*25.87*
July										4.42
August										4.43
September										4.28
3rd Quarter										*13.13*
9 months										*39.00*
October										4.43
November										4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,553,721 net tons open hearth, 98,849 net tons Bessemer and 97,358 net tons electric ingots and steel for castings, total 1,749,928 net tons; based on annual capacities as of January 1, 1947 as follows: Open hearth 81,010,990 net tons, Bessemer 5,154,000 net tons, Electric 5,076,240 net tons, total 91,241,230 net tons.

† Preliminary figures, subject to revision.

YEAR 1946

Based on Reports by Companies which in 1946 made 97.6% of the Open Hearth, 100% of the Bessemer and 85.8% of the Electric Ingot and Steel for Castings Production

Period	Estimated Production—All Companies								*Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL			
	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity		
January	3,528,090	51.1	207,512	47.4	136,452	29.2	3,872,054	49.6	874,053	4.43
February	1,300,944	20.9	25,905	6.6	65,668	15.6	1,392,517	19.8	348,129	4.00
March	5,946,698	86.2	363,949	83.1	196,400	42.0	6,507,047	83.3	1,468,859	4.43
1st Quarter	*10,775,732*	*53.8*	*597,366*	*47.0*	*398,520*	*29.4*	*11,771,618*	*51.9*	*915,367*	*12.86*
April	5,333,139	79.8	286,088	67.5	241,031	53.3	5,860,258	77.5	1,366,028	4.29
May	3,699,979	53.6	153,409	35.0	219,064	46.9	4,072,452	52.2	919,289	4.43
June	5,145,594	77.0	251,253	59.2	227,979	50.4	5,624,826	74.4	1,311,148	4.29
2nd Quarter	*14,178,712*	*69.9*	*690,750*	*53.7*	*688,074*	*50.1*	*15,557,536*	*67.9*	*1,195,814*	*13.01*
1st 6 months	*24,954,444*	*61.9*	*1,288,116*	*50.4*	*1,086,594*	*39.8*	*27,329,154*	*59.9*	*1,056,403*	*25.87*
July	6,023,799	87.5	365,332	83.6	228,083	48.9	6,617,214	84.9	1,497,107	4.42
August	6,287,617	91.1	373,837	85.4	261,755	56.0	6,923,209	88.7	1,562,801	4.43
September	5,947,688	89.2	371,465	87.8	235,054	52.1	6,554,207	86.9	1,531,357	4.28
3rd Quarter	*18,259,104*	*89.3*	*1,110,634*	*85.6*	*724,892*	*52.3*	*20,094,630*	*86.8*	*1,530,436*	*13.13*
9 months	*43,213,548*	*71.1*	*2,398,750*	*62.2*	*1,811,486*	*44.0*	*47,423,784*	*69.0*	*1,215,994*	*39.00*
October	6,308,845	91.4	387,933	88.6	253,562	54.3	6,950,340	89.0	1,568,926	4.43
November	5,869,767	87.8	318,350	75.1	268,655	59.4	6,456,772	85.4	1,505,075	4.29
December	5,283,651	76.7	222,704	51.0	253,353	54.3	5,759,708	73.9	1,303,101	4.42
4th Quarter	*17,462,263*	*85.3*	*928,987*	*71.5*	*775,570*	*56.0*	*19,166,820*	*82.8*	*1,458,662*	*13.14*
2nd 6 months	*35,721,367*	*87.3*	*2,039,621*	*78.5*	*1,500,462*	*54.1*	*39,261,450*	*84.8*	*1,494,536*	*26.27*
Total	60,675,811	74.7	3,327,737	64.6	2,587,056	47.0	66,590,604	72.5	1,277,150	52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,558,041 net tons open hearth, 98,849 net tons Bessemer and 105,491 net tons electric ingots and steel for castings, total 1,762,381 net tons; based on annual capacities as of January 1, 1946 as follows: Open hearth 81,236,250 net tons, Bessemer 5,154,000 net tons, Electric 5,500,290 net tons, total 91,890,540 net tons.

*Revised July through December, 1946.

CPA Sets Up Informal Reporting System

Data on Orders, Production And Deliveries Are Designed To Aid Car Program

Washington

• • • **A reporting system** to serve as a basis for informal action through which CPA will support a program aimed at producing 7000 new freight cars monthly was set up at a meeting in Washington of the Freight Car Builders Industry Advisory Committee. CPA can also use the information on steel orders, deliveries and production, in determining whether builders are buying more than their immediate needs.

Since the steel industry has agreed to provide 165,000 tons monthly, the committee members decided that each builder should set his own level of production on his ability to negotiate with the steel producers. CPA can also use the informal reporting system to determine whether any builder is buying in excess of immediate needs.

Although the steel industry program does not become effective until April, some producers have promised as much assistance as possible during March.

Under the agreement with the steel industry for shipment of 165,000 tons of steel monthly, the product classification is:

Plates, 63,000 tons; shapes, 37,000; bars, 24,000; sheets, 22,000; axles, 12,500; pipe, 3600; and billets, 2700 tons.

Approximately 102,000 tons monthly of this total amount is to go into production of new cars; the remainder will be used for repairs and maintenance although some builders feel that not enough has been allotted for repair purposes.

Although some car builders were frankly skeptical of the industry's ability to produce the promised amount of steel, railroad men appearing before a Senate subcommittee investigating the car shortage optimistically foresaw 1947 production as equaling the amount of cars now on order. about 82,000.

What is needed during the shortage, however, is not more laws on the books but closer cooperation by all and stricter supervision of car movements by the railroads, according to R. V. Fletcher, president of the Association of American Railroads.

Unparalleled transportation records were piled up during the war largely as the result of highly qualified men on the job among shippers, the railroads, and the government agencies, the legislators were told, each closely cooperating with the other and handling each problem as it developed. Legislation can do very little in bringing such things about.

Emphasizing that car loadings are now running 20,000 a week above a year ago with 7600 fewer cars in service, W. C. Kendall, chairman of the AAR car service division, told the group that this is a result of united action in bringing about heavier loading and prompter handling, both in loading and unloading.

Turn-around time has been reduced from 16 days as of a year ago to 13 days as of January of this year, he told the subcommittee.

Ford to Spend $1 Million On Cold Mill Expansion

Detroit

• • • **Ford Motor Co.** is planning to spend $1,147,000 for a one story addition 440 x 180 ft at the south end of the present cold mill building, it has been learned.

The new addition, which will be started immediately, is expected to be in operation within 6 months and will provide improved handling facilities for cold-rolled steel produced at the Rouge.

While no increase in rolling facilities is planned, the new addition will increase the flat-rolled steel tonnage available at the Rouge, thus freeing outside mills of this much capacity to supply the needs of other steel users.

The present Ford cold mill setup is known to be unsatisfactory in several respects: For one thing, due to lack of space, steel coils have to be piled outside in aisles two and three deep and overhead on balconies never intended for this purpose. Under present conditions it is necessary for Ford to transport hot-rolled coils from the mill to yard storage by railroad cars, unload by locomotive cranes, reload for pickling and transfer back to the cold mill division.

It has been reported that handling of the annealed coils may result in damage to the steel, causing increased scrap losses. In addition, it is said that outside storage often results in rusting, lost welding time and the pitting of the cold-rolled surfaces.

A final reason for the new Ford addition is that while correcting excessive handling, rusting and pitting difficulties, the new facilities will also permit better integrated production schedules which will result in an overall increase in the efficiency of the Ford mills.

LEAK? *Rep. Karl E. Mundt (R-S.D.) scans a book published by Amtorg Soviet Russian trading agency which details vital U. S. industrial information. The Congressman is demanding tighter security regulations.*

Welding Group to Meet

Dayton

• • • **The 1947 convention** of the National Welding Supply Assn. will be held at the Benjamin Franklin Hotel, Philadelphia, May 5 and 6, according to G. H. Ohmer, managing director of the association. The meeting will be open to all welding supply distributors and manufacturers and, in addition to several group forums, election of officers and trustees will be held.

Weekly Gallup Polls . . .

Attlee's Popularity Down Sharply Since His Election

Princeton, N. J.

• • • **The popularity of** Clement Attlee, prime minister of Britain's Labor Government, has declined sharply as compared to a year and a half ago when the war ended, according to George Gallup, director, American Institute of Public Opinion.

However, the popularity of the head of the British Labor Government has not changed much in the last few months. With his government putting through a drastic program of nationalization of basic industries, such as coal and transportation, Mr. Attlee is approved as prime minister by little more than half of his fellow citizens, while about one third disapprove and the rest express no opinion.

The trend of Mr. Attlee's popularity has been measured by the British Institute of Public Opinion as follows:

"Are you satisfied or dissatisfied with Mr. Attlee as Prime Minister?"

	Satisfied Pct	Dissatisfied Pct	No Opin. Pct
August, 1945	66	19	15
October, 1946	53	35	12
TODAY	52	30	18

Mr. Attlee enjoys somewhat more popularity in his country than President Truman does here. A recent survey by the American Institute of Public Opinion on the question, "Do you approve or disapprove of the way Mr. Truman is handling his job as President?", showed 48 pct approving, 39 pct disapproving, and 13 pct without opinion. This represents a sharp gain in Mr. Truman's popularity as compared to early January.

The British foreign secretary, Ernest Bevin, has impressed the British people with his abilities in handling foreign affairs. Mr. Bevin has, in fact, aroused somewhat less antagonism in his job than Mr. Attlee has in his.

The British Institute asked the voters of Britain:

"Do you think that Ernest Bevin is or is not doing a good job as Foreign Secretary?"

The vote last November and today is as follows:

	Doing Good Job Pct	Not Doing Good Job Pct	No opin. Pct
November, 1946	58	19	23
TODAY	54	20	26

Britishers, however, seem more satisfied with Mr. Attlee and Mr. Bevin personally than with the government's record as a whole. This may be a reflection of attitudes toward the government's handling of such problems as food and housing, and toward the policy of nationalization.

In an October 1946 survey, in answer to the question, "Are you satisfied or dissatisfied with the government's record to date?", 44 pct said they were satisfied, 43 pct were dissatisfied, and 13 pct had no opinion.

Today the division of the sentiment is about the same—43 pct satisfied with the record, 42 pct dissatisfied and 15 pct without an opinion.

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• • • **There is widespread** fear among the peoples of the world that the warlike ideals of Germany have not been rooted out, and that she will one day again become an aggressor nation.

Those sentiments are revealed in a four-nation survey conducted by the Gallup Poll and its affiliates. The people of the United States, England, Canada, and Holland were polled on attitudes toward Germany and the German people in surveys which were conducted simultaneously and which used the same questions.

This international poll also reveals the following:

(1) The feelings of the average American, Briton or Canadian are not unfriendly toward the German people. Nearly 2 years after the ending of the European war, more voters in those three countries say they feel friendly toward the people of Germany than say they feel unfriendly. They do not believe, however, that Germany will become a peace-loving, democratic nation.

Widespread Feeling Revealed In Survey that Germany Will Never Banish Warlike Ideas

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(2) The feelings of the people of Holland, a country with territory bordering on Germany, and one which suffered recent occupation by Hitler's forces are considerably more hostile to Germany than those of the British, Canadian or American people. The Dutch not only indicate that they feel little goodwill for the German people, but also are more convinced than their English or American allies that Germany will someday again become a war-like and aggressive nation.

In short, the overwhelming weight of public sentiment in four allied nations is distrustful of Germany and skeptical of any peaceful intentions that she might avow.

The fate of Germany is to be decided at the conference of foreign ministers in Moscow in March. To see what the mood and general attitude of the public in various countries is today regarding Germany, the following questions were put to a cross-section of voters in the four nations already mentioned.

The first question was:

"At the present time, do you feel friendly or unfriendly toward the people of Germany as a whole?"

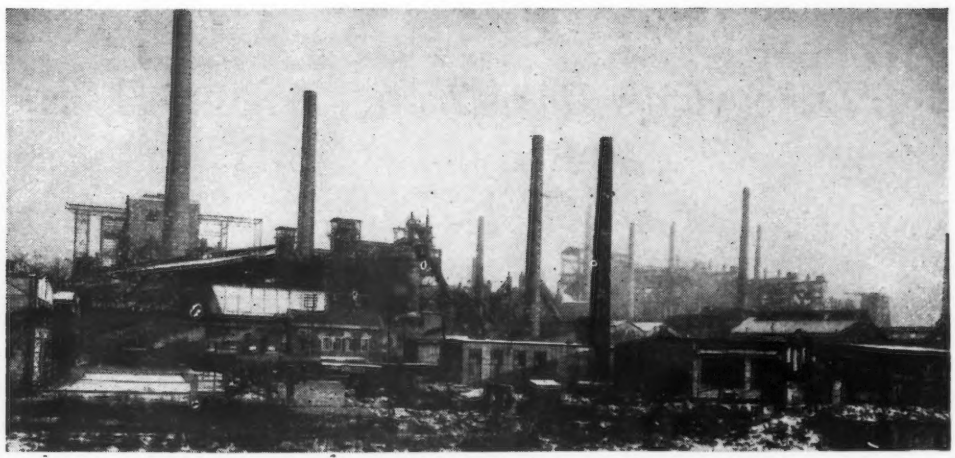
The vote in the four nations follows:

	Friendly Pct	Unfriendly Pct	No opin. Pct
USA	45	28	27
Britain	42	36	22
Canada	41	28	31
Holland	29	53	18

The second question was:

"Do you think Germany will become a peace-loving democratic nation, or do you think she will again some day become an aggressor nation and want to start a war?"

(CONTINUED ON PAGE 161)



SCENE IN THE SAAR: *Looking more like a strikebound mill than a going steel plant this Voelklingen steel plant near Saarbruecken is typical of much of Germany's steel industry which is operating at only a fraction of its former capacity.*

British Planning Reorganization of German Steel Industry

Program Includes Socialized Industry and Liquidation Of Old Steel Combines

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By JACK R. HIGHT
European Editor

o o o

Dusseldorf

• • • **One of the many** pressing problems facing British politicians both here in Germany and in the United Kingdom is the future of German industry. There is some truth in the statement that until the four powers have decided the political future of the Ruhr no one can tell what the corporate form of the steel industry will be. On the other hand, both Englishmen and Germans here have definite ideas on the subject, and are attempting to arrange the future of the big steel companies regardless of any national or international allegiance which they may acquire at Moscow.

From a long-range standpoint, the most important single factor affecting the shape of the steel companies of the Ruhr at the moment is the House of Commons in London. This House, with its Labor-Socialist majority needing as constant nursing as the Solid South does in the Senate, demands that there can be no compromise with socialism in Germany, as there must be none in England.

Thus this correspondent has been somewhat surprised to hear British officials here in the Ruhr, as well as British sponsored German officials, mouth the view that the German people actually wish to see their industries socialized. The only free expression the Germans have made on the subject was in preliminary elections where the Christian Democratic Union was the largest party. It is a Roman Catholic party, certainly anti-socialist in its outlook. Despite this fact, the British Military Government goes on supporting the S.P.D. (Socialist) party more or less openly, and as a result this group may turn up the victor in the new elections which are to come up at the end of March for the selection of the parliaments for the various German states.

As far as steel is concerned, the known hostility of the American Military Government to socialism in any form is making it somewhat complicated for any American correspondent to get a complete picture of plans now drawn up. No secret is made of the fact that under a military order promulgated last August "control" of the largest steel combines was vested in the North German Iron and Steel Control, with headquarters in Dusseldorf. This move was a rather hasty one, with primarily financial implications, to halt dealings in the shares of the big firms — embarrassing questions were being asked all over Europe as to the reasons for the gradual increase in value of these stocks.

Since that time the steel Control has been engaged in drawing up a plan for the reorganization of the German steel industry. The key figure in this new plan is Heinrisch Dinkelbach, former Veriengte Stahlwerke financial expert, and now on the staff of the North German Iron and Steel Control. THE IRON AGE is informed by the deputy controller of the organization that Dinkelbach has severed all his previous connections with the German industry, and is now engaged solely in planning work for the group.

Before this material reaches print it is expected that there will be four new steel companies in the Ruhr, sponsored by the Control, with strange names but including as separate units four of the most important remaining steel works in western Germany. Formal operations are to start in the new companies within 2 weeks, at what was formerly the (1) Gutehoffnungshueete, Oberhausen; (2) Dortmund-Hoerder; (3) Kloeckner-Werke Haspe, Duisburg; (4) Eisen-und Huettenwerke, Bochum.

These works have been chosen

because they represent four different important steel combines, and are the initial steps in a broad program that will eventually see all of the plants which are to remain in operation in postwar Germany separated from their present parent organizations and divided into separate companies for each steel plant. The program is a deliberately slow one for a number of reasons. The Control does not wish to bother with setting up a new operating company for mills that may later be shut down for reparations or as excess to the final determination of Germany's steel needs. Thus the military government body hopes to work gradually down the list of steel companies now in operation, and by the time it has emancipated the top of the list other authorities will have determined how many of those mills at the bottom are to remain in operation.

The avowed intention in setting up these new companies is to permit the operating steel units to start off in the postwar period with a clean slate, freed from the harrowing burdens of indebtedness and complicated financial entanglements which will be saddled on the old combines. The ultimate result of this program if it is carried through to its conclusion will be that the old line steel combines will eventually become paper organizations, with no producing units left within their control. They will be left with closets full of the paper remains of their wartime and prewar past, but little else.

The plan is to approach the final liquidation of these combines, as provided for in laws already promulgated by military authority at a later date when some of the complex legal and financial intricacies with their admittedly difficult international complications are already settled. For the present the arrangement is for the new companies—their names "aren't ready for the press as yet"—to simply lease the operating units from the old firms, thus avoiding the complex problem of compensation for the moment.

The burdens of existing indebtedness, future capital investment needs, compensation for foreign shareholders, equalization of the reparations blow, are all being ducked for the moment. Thus the trying fundamental question of property rights of all kinds remains one of those harassing postwar problems that is better put off until tomorrow if you do not have to face it today.

From the operational side the new steel companies are to be headed by a board of three directors, one a commercial-financial representative, one a technical man, and one a trades union representative to represent the workmen on all welfare questions. Below this board is a supervisory board which may in many respects resemble a labor-management joint production committee with somewhat increased powers which is to be made up of five members from the management and five from the unions plus a man representing the North German Iron and Steel Control. Particular emphasis is placed by official sources on the necessity for the expansion of democratic principles into industry. This may be translated in the classic socialist sense, to give labor a voice in every important management decision.

The actual men who are to head the new companies have not been announced at this writing, but it is understood that the men under consideration at the moment are more or less logical choices for the respective posts. They are in most cases being nominated from the operating steel mill where they are to be posted, and of course come from the respective departments which they will represent. German steel industrialists are quite incensed at the moment as all nominations are being submitted to trades union officials for their approval, but the management side is not even being given a voice in the selection of the technical and commercial men.

Drawing a precise line of demarcation for the works which are to be affected by this severance program has been difficult. At the present, only blast furnace, steel melting, and hot-rolling mills are being affected, the latter only when integrated with melting operations.

According to the best information available through official sources all this has nothing whatever to do with the future ownership of the German steel industry, other than to assure that it must change. British military sources insist that this program will have no effect on the possibility or probability of socializing the industry. When the program is complete the ownership of these new firms will be vested in the military government, and will in the course of future events be handed over to whatever German government is authorized to exist by the peace treaty. That may be a central government, or states, or some other system.

The evolution outlined above seems to be as far as the experts care to predict. From that point forward it becomes a matter for the vagaries of German domestic politics, within any limitations set

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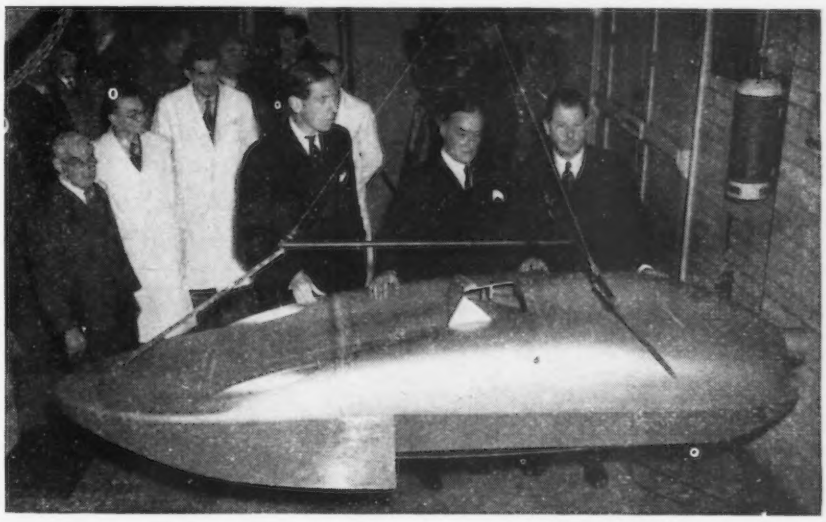
JET SPEEDBOAT: *Commander P. du Cane, Sir Malcolm Campbell and Major F. Halford (left to right) look over the model of Sir Malcolm's jet-propelled speedboat, which has been undergoing test at the Fairey Aviation Co.'s wind tunnel, said to be the largest in England.*



up by the Allies. There is a strong group within the trades union movement which advocates a kind of municipal steelworks plan, and some Germans told me that this system is to be tried eventually. As evidence they offered the fact that the mayor, or oberburgomeister, of Dortmund is to be a trades union representative on the supervisory board of the Dortmund-Hoerder works in that city, and a similar plan is anticipated in the Klockner-werke at Haspe.

Christian Democratic Union, which is the most conservative of the important parties, favors a type of cooperative management in which the industrialists would play the dominant role. The Socialist party originally favored one powerful steel combine to run the whole of the industry for the government.

There is a haunting fear in the minds of many that such a system would only play into the hands of a future warmongering government which is veering even the socialists away from their centralizing ideas. In the minds of the socialist party leaders, as well as of most trade union leaders, the socialization of the steel industry is already under way with the implementation of the program of the North German Iron and Steel Control, although that body denies that such is true.

Rumors flow free and fast both here and in London that the program which has started is a well defined one which originally was called nationalization, but the conflict between the Labor party in the House of Commons and the anti-socialist Americans, both of whom must be appeased, has the officials here in Dusseldorf leading honest newspapermen into a Sargasso of doubletalk.

How all of this planning will fit into the political future of the Ruhr is still vague in many minds, but most officials believe that the more there is accomplished here before the peace treaty is signed, the less change is apt to occur. There is increasing pressure for lifting the top limit on the German level of industry which was fixed last year at 1932 levels. Principal changing factors in this situation are that the Russians, now convinced that their program of obtaining reparations in the form of capital goods has not been successful, are now anxious to build up German industrial activity and collect reparations from current output, plus the anxiety of U. S. officials to raise the whole scale of industrial activity in the southern area.

French officials are remaining adamant in their demands for international control of the western German industrial area, and have offered a new hope in this line in recent discussions. Despite a general cynicism born of 1920 experience with such programs, both British and American diplomats are reported to have been possibly willing to accept the internationalizing of the Ruhr. There has been one fundamental drawback, that such a plan would place the Russian influence that much further west into Europe.

Now the French officials are suggesting that both the Ruhr and Silesia should be internationalized, thus giving the Western Allies a peep behind the so-called "Iron Curtain." This proposal might have the possibility of saving some face for former Secretary Byrnes' statement in Stuttgart to the German people that he did not consider the Polish - German border question closed, or on the other hand might possibly be simply a bargaining point on which Mr. Molotov might offer a reciprocatory hands-off policy in each case.

While the struggle is going on to determine the future of the Ruhr and the steel companies, British Military Government officials on the operations side of the steel group are continuing their efforts to push production as high as possible. Despite the pushing, the result at the moment looks like a losing battle to keep ingot output at an annual rate of about 3 million metric tons.

The original program as outlined for 1947 by British officials here specified that the ingot rate should not fall below 4.5 million tons for this year, and the finished steel output was pegged at 3.6 million metric tons. This goal has been somewhat tarnished by the action of the Germans themselves, who have taken a somewhat less enthusiastic view of the importance of steel to the nation's economy than have the British.

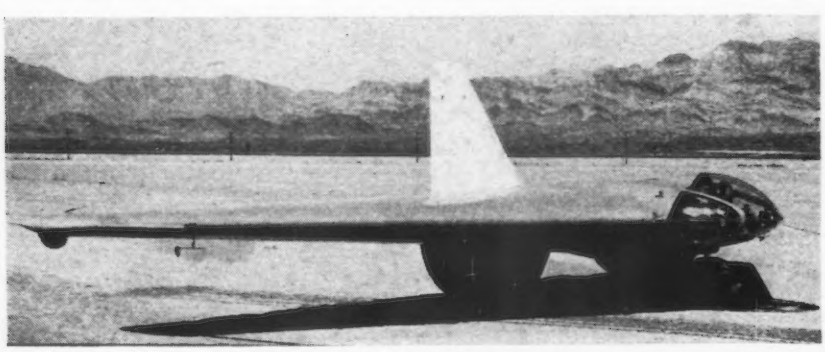
During 1946 problems of allocations of raw materials were all settled by the British officials, but in line with the broad policy of transferring these functions to the Germans, as of Jan. 1, fuel allocations for steel as well as other consumers came under the jurisdiction of the German economic mission for the combined Anglo-American zones located in Minden.

This body, looking over the stated requirements of the steel industry, decided that cuts were to be the order of the day. The German railway system had fallen into the doldrums due to the freezeup on the canals which overburdened the rail loadings, and the politicians decided that the domestic allocations should be increased.

To find the coal the steel program for the month of January was cut by 40 pct. Considerable confusion was caused in the steelworks as this decision was not announced until the third day of the month in which the cut became effective. According to this decision by the Germans, the finished steel schedule, which should have run at 300,000 metric tons per month, would go down to 240,000 for January, 200,000 for February, and they would make no estimates of the possibilities for March.

British officialdom decided that

PRONE PILOT: *The Army recently disclosed that this tiny Northrup flying wing rocket ship was first flown more than 2 years ago and has been subsequently improved at the company's Hawthorne, Calif., plant. The pilot rides in the prone position, a most unusual way to earn a living. MX-324 is its model designation.*



handing "functions" over to the Germans was satisfactory to a degree, but at this point, military government took a hand, and again revised the steel program upward, although a final agreement for the second quarter has not yet been reached. Due to the chaotic position hanging over from December, when almost no coal was delivered due to the transport breakdown, some stocking has been necessary, and up to the middle of January almost no coal had yet been delivered to the mills. Thus January output figures will probably be about 85,000 tons to 95,000 tons of finished products, and the cumulation of fuel difficulties and transport problems will probably prevent attainment of the revised figure of 360,000 tons for this month. About 200,000 tons seems a more likely figure.

It was essential that the British officials step in to protect the steel output, as agreements are already signed which commit the British zone to the barter of steel with the Russian zone in exchange for food. Another complicating factor is that the original program for 4.5 million tons for the year presumed that throughout the year 23 pct of the finished products would be used for the Ruhr coal mines. This tonnage is being regarded as a fixed minimum, irrespective of the needs of other steel consumers, to prevent a drop in the output of coal.

For these reasons, the steel group in military government started their negotiations for fuel supplies on a strictly adamant basis. Their attitude was that unless you operate at the 4.5 level, it is not worth keeping the German steel industry in operation, but would be more economical to ship the fuel out and make the steel elsewhere. This position has been modified in actual practice, as the first quarter output is below the level and there is no serious consideration that the industry will be closed completely.

The increasing shortage of power, a further result of the fuel position, is actually a primary controlling factor on output at the moment. There are 14 large steelworks power stations in the Ruhr, all of which in normal times were releasing an excess of power above their own needs to the Ruhr grid, and all of which have been standing idle since the end of the war.

Thus, the steel firms are drawing power from the grid, accentuating the overall shortage rather than alleviating it. In estimates made for the amount of solid fuel required to produce 4.5 million tons of steel, sufficient coal was specified to reopen certain of the power stations, but the subsequent confusion over allocations has resulted in a stalemate on this point.

The shortage of freight cars is becoming more acute, as at the end of 1946 42,000 tons of finished products were on hand at the mills awaiting cars for shipment. The program initiated last year to use up the stocks of ingots and semis at the mills has about drawn to a close. According to military government statistics there is at present about 800,000 tons of this material on hand at the various mills, but only 36,000 tons of this is suitable for immediate use. Approximately 400,000 tons of such stocks were used up during 1946.

Inaccurate Data Halt Token Plan Governing U. S. Exports to Britain

Washington

• • • **Because some applicants** have overestimated the amount of their exports, the certification procedure under the British Token Import Plan has been temporarily suspended. In making this announcement the Office of International Trade, Dept. of Commerce, said that for a number of commodities the total prewar exports as shown on applications has substantially exceeded the corresponding figures as shown by latest government statistics.

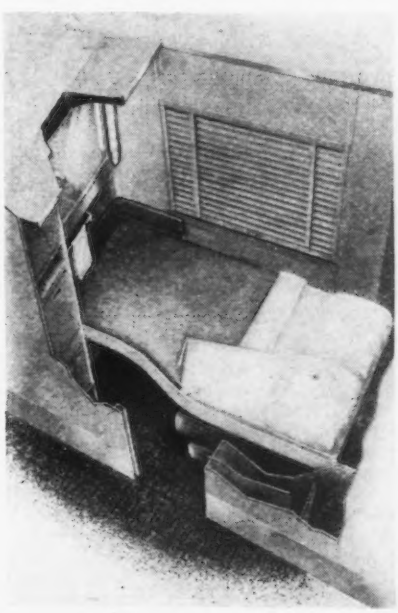
The plan, initiated last August through an arrangement between OIT and the British Government, attempted to aid prewar exporters of specified goods in reentering the British market. The objective is to reestablish trade channels with the United Kingdom on a basis which permits traders to export 20 pct by value of their average annual exports to Britain during 1937, 1938 and 1939.

To obtain this advantage for American business, OIT agreed to certify the trader's statement of his eligibility and his prewar exports as a basis for issuance of an import permit by the British Government.

OIT has followed the procedure of accepting without adjustment the data submitted in the statements of applicants. This has resulted in issuing scrip for certain items in excess of the overall United States quota. The British Board of Trade and OIT have agreed that certification of applications should be suspended until a more satisfactory method can be put into effect.

Procedures are being worked out which will insure that United States obligations under the plan can be carried out, OIT said. Announcement of the amended procedure is expected shortly.

CLEAR THE AISLES: *Roomette passengers need no longer project part of their anatomy into the aisles in order to lower the bed in this new Budd designed cabin. Individually controlled fluorescent lighting and air conditioning are among its new features.*



N. Y. Air Brake Income Up

New York

• • • **The New York Air Brake Co.** in its annual report shows a net income after taxes for 1946 of $947,199 equal to $3.65 per share, compared with $581,847 at $2.25 a share in 1945.

Net sales for the company in 1946 were $15,032,782 compared with $18,484,635 in 1945.

Sheet Magnesium Plant Leased to Revere For 2-Yr Period by WAA

Washington

• • • **WAA has announced** lease of the only government-owned sheet magnesium production plant to Revere Copper & Brass, Inc., of Baltimore.

The 2-year lease, with an option-to-buy clause, calls for a minimum monthly rental of $500, plus a graduated scale of rental fees based on 100,000 lb units of monthly production. This amount ranges from $0.005 per lb for the first 100,000 lb to $0.035 per lb for all monthly production over 400,000 lb.

The installation, originally costing the government $853,145, has an annual rated capacity of approximately 5,000,000 lb of sheet magnesium, compared to a national capacity of 8,340,000 lb.

WAA pointed out, however, that development of full-scale production of sheet magnesium has not as yet been accomplished. Much experimental work remains to be done, particularly in the production of continuous rolling mill products, before a wide demand for sheet magnesium is expected. The material is used principally in manufacture of automobile and aviation component parts.

WAA also has announced that an aluminum forging plant located at Saginaw, Mich., has been leased to the Chevrolet Div. of General Motors Corp. for 5 years at an annual rental of $132,324.

The plant, constructed in 1942 at a total reported cost of $9,337,090, was sponsored by the War Dept. for the construction of heavy hammer forgings. The lessee plans to convert the facilities to the fabrication of transmission parts, bumpers and other service parts, with proposed employment of 500 persons.

Coming Events

Mar. 2-5 American Society of Mechanical Engineers, spring meeting, Tulsa, Okla.
Mar. 6-8 National Assn. of Foremen, annual national conference of educational directors in industry, Cleveland.
Mar. 17 American Institute of Mining & Metallurgical Engineers, world conference on mineral resources, New York.
Mar. 17-19 American Society of Lubrication Engineers, annual meeting, Pittsburgh.
Mar. 17-19 American Gas Assn., sales conference, Boston.
Mar. 17-19 Chicago Technical Societies Council, production conference, Chicago.
Mar. 19-22 American Society of Tool Engineers, annual meeting, Houston.
Mar. 22 Western Metal Conference and Exposition, American Society for Metals, Oakland, Calif.
Mar. 24-25 American Machine Tool Distributors' Assn., spring meeting, Chicago.
Mar. 31-Apr. 2 Midwest Power Conference, Chicago.
Apr. 7 Packaging Machinery Manufacturers Institute, semiannual meeting, Philadelphia.
Apr. 7-10 National Assn. of Corrosion Engineers, convention, Chicago.
Apr. 8-11 American Management Assn., packaging exposition, Philadelphia.
Apr. 14-16 National Machine Tool Builders' Assn., spring meeting, Atlantic City, N. J.
Apr. 14-17 Southern Machinery & Metals Exposition, Atlanta.
Apr. 28-29 American Zinc Institute, annual meeting, St. Louis.
Apr. 28-May 1 American Foundrymen's Assn., congress and exposition, Detroit
Apr. 29-May 1 Industrial Packaging and Materials Handling Exposition, Industrial Packaging Engineers Assn. of America, Chicago.
May 6-10 Society of the Plastics Industry, Inc., exposition, Chicago.
May 15-17 Society for Experimental Stress Analysis, annual meeting, Chicago.
May 27 Metal Powder Assn., spring meeting, New York.
June 9-11 American Coke & Chemical Institute, annual meeting, French Lick, Ind.
June 16-20 American Society for Testing Materials, annual meeting, Atlantic City, N. J.
June 17-19 Machinery Dealers National Assn., convention, Cincinnati.

Kaiser Asks ICC to Halt Geneva Freight Rate Cut

Washington

• • • **Charging discrimination** in a proposed freight rate reduction of 31 pct or $4.40 per net ton on steel products shipped from the Geneva Steel Co. to Pacific Coast points, Henry J. Kaiser, on Feb. 18, announced that he has asked the ICC to suspend this reduction, which is scheduled to become effective Mar. 1.

Mr. Kaiser said that the proposed reduction would "grant the United States Steel Corp. an exclusive subsidy of $1,200,000 or more annually at the expense of western consumers and manufacturers."

He maintained that his Fontana steel plant is called upon to underwrite the revenue needs of the railroads by an increased amount of $600,000, under the 17.6 pct rate increase of Jan. 1, while the Geneva Steel Co. is to be granted reductions of more than twice that amount. Mr. Kaiser claimed that he asked for reductions for Fontana at the same time that such a request had been made for Geneva but that his request has not been granted.

Fairless Answers Kaiser

New York

• • • **Answering the charge** made by Henry Kaiser that proposed new freight rates on transportation of steel by rail from Geneva, Utah, to the Pacific Coast amount to the granting of a subsidy to the firm, B. F. Fairless, President, U. S. Steel Corp., without mentioning Mr. Kaiser specifically, branded the allegations as "made without any foundation in fact."

"Any reduction in the present freight rates on shipment of steel by rail from Geneva, Utah, to the West Coast will benefit a customer of Geneva Steel Co. on the Pacific Coast to the extent of such reduction, and not Geneva Steel Co."

"These new freight rates, if made effective, will reduce the present delivered cost of structural shapes and plates from Geneva to a customer at Los Angeles, San Francisco or Portland to the extent of approximately $4.50 a ton. At Seattle, such reduction in the delivered cost will be in excess of $3 a ton. That cannot accurately be described as a subsidy in favor of Geneva Steel Co."

The London ECONOMIST

Famine in Russia

Reprinted by special permission to further understanding on how political and economic affairs are viewed in London.

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THE latest communique of the *Gosplan* on the results of the first year of the Fourth Five Year Plan contains a highly dramatic piece of information — the story of the devastating drought that swept the plains of the Pruth, the Don, the Dnieper and the Volga in 1946.

News about the calamity was known even before. The Press had hinted about it; Mr. Zhadanov spoke about it gravely on the anniversary of the Revolution; and more recently an open letter of the peasants of the Kursk region to Mr. Stalin shed some light upon the plight of the countryside. But the tragic dimensions of the drought have only now become known. In a few sparingly worded sentences the Planning Commission describes the progress of the drought, which commenced in early spring [the end of March 1946] in Moldavia, rapidly spread to the southwestern districts of the Ukraine and then swept all the regions of the central Black Soil Zone, including the northern regions of the Ukraine. By the middle of May the drought spread to areas on the right bank of the lower reaches of the Volga. Such drought had not occurred in the territory of the USSR in the past 50 years. The territory affected is larger than that stricken by the drought of 1921, and nearly as great as the area affected by the drought of 1891. The two dates evoke ominous memories. In 1921 nearly 25 million people suffered from famine. Cases of cannibalism were recorded on the Volga. The disaster found Russia exhausted after 7 years of war, revolution, civil war and intervention. The drought struck exactly those areas that had previously suffered the greatest devastation.

In this respect, the situation now is very similar. The drought has spread, in the main, over the lands formerly occupied by the Nazis. The drought of 1891 was even more severe; but its consequences were perhaps less disastrous because the economic organism of Russia was at that time less exhausted. Even so, the calamity initiated a period of misery and social ferment which sapped the strength of the Tsarist Empire.

How is Russia going to take this new blow? The Planning Commission hastens to mitigate the shock of its announcement by drawing a distinction between the present situation and that of 1921. It states that "the gross harvest and the marketable grain output in 1946 were incomparably higher than in 1921." The difference is attributed to the superiority of mechanized collective farming over the old forms of agriculture.

In addition, there are newly developed granaries in the Soviet East, especially those of Western Siberia and Kazaknstan, where last year's grain crops were reported to have been 50 pct higher than in 1945. This report may or may not conflict with another, published in Pravda only a few weeks ago, according to which the sown area beyond the Urals is now smaller than it was before the war. The Planning Commission may have overemphasized the hopeful features of an admittedly grave situation in order to boost the morale of a sorely tried people; but it would certainly be wrong to dismiss the whole statement as mere propaganda. The food administration can now certainly draw on granaries in the East which were not open to its predecessor of 1921.

IT IS also almost certain that the war stocks, at least of bread which were accumulated in the thirties, have not yet been entirely exhausted. This seems to be borne out by the preparations for the abolition of rationing that were announced early last year and were later cancelled only after the extent of the drought had become quite clear. But it is not known how big those reserves really are. Only rough guesses can be made about the 1946 grain crop on the basis of hints in the Russian press. It would be very surprising if the total crop exceeded 50 million tons —which is 50 pct of the average harvest of the last prewar years. It may be considerably lower. If properly distributed—and the "if" is a big one—the year's crop and such reserves as are available may be just enough to tide the country over till the next harvest.

What is certain to be much more disastrous is the already existing fat famine. The drought has spoilt the crop of oleaginous plants in the Caucasus, especially of sunflower seeds, which were expected to mitigate the extreme shortage of animal fats. The rehabilitation of the sugar industry in the Ukraine, which produces the bulk of the country's sugar, has suffered a severe setback through the loss of the sugar beet crop. The Russian meat rations have long been almost as low as the German rations are now; and prospects for the near future are bleak.

It is a tragedy that UNRRA relief in the Ukraine and in Byelorussia is coming to an end just at the time when those devastated lands are about to feel the full impact of an unexpected calamity. The great mass of Ukrainians and Byelorussians inevitably feel that they are entitled to continued assistance from more fortunate Allied nations; they contrast the withdrawal of that assistance with the much-publicized scheme of British and American credits for Germany; and they see themselves as the victims of a treacherous game in Western power politics.

The view expressed in some

(CONTINUED ON PAGE 162)

AA Asserts Disposals Furthur Competition in Aluminum

Report to Congress Indicates Reynolds and Permanente Are Chief Recipients

o o o

Washington

• • • **Making its first** supplementary report on Feb. 12 regarding government-owned aluminum plants and facilities, WAA told Congress that the distribution of productive capacity in surplus plants to new independent producers represents a major step toward the establishment of a competitive aluminum industry but production in these plants and the marketing of their output will eventually determine this issue. The plants remaining to be disposed of, the report said, are chiefly those in the fabricating group. WAA informed Congress that it will continue to follow a course of endeavoring to establish competition in the aluminum industry and to achieve pertinent objectives of the Surplus Property Act.

On Nov. 30, 1946, WAA stated, it had disposed of $387,300,000 worth (reported cost) of government aluminum plants and facilities. Plants declared surplus up to that date amounted to $651,800,000. This means, it was pointed out, that plants representing over half of the original government dollar investment in the aluminum industry have been disposed of. Disposals comprise chiefly of leases, the dollar value of the leased plants being $296 million. Plants costing $79,600,000 have been sold for a total of $28,500,000.

Of the 56 government-owned plants, 53 were originally declared surplus and one was later withdrawn by the Navy Dept.; 14 have been sold and 14 leased. Of the 28 disposed plants, 16 will continue operation in the aluminum industry. The Reynolds Metals Co., and the Permanente Metals Corp. (Kaiser interests) were the principal firms involved in the disposal program.

These companies now have been provided with the potentialities of becoming competitive factors in the industry, WAA declared, assuming that they can insure access to substantial and economical sources of bauxite. In this way, the report said, the relative shares of capacity now in private hands (both through ownership and lease), are, for alumina, Alcoa, 43.7 pct; Reynolds, 35.9 pct and Permanente 20.4 pct, and for primary aluminum, respectively, 54 pct; 29.2 pct and 16.8 pct.

"In considering prospective competitors of Alcoa," the report said, "the policy was to select bidders having 'the organization, experience and financial resources that afford the greatest prospects for successful survival and maximum production in industry.' The Reynolds Metals Co. and the Kaiser interests were, therefore, in some instances given preference over the other bidders.

"The key plants in alumina production, aluminum reduction and fabrication have been leased or sold to Reynolds or Permanente. Aside from Alcoa, Reynolds is the only integrated producer having previous experience and an established organization. Kaiser, while entering the aluminum industry for the first time, has an established organization which operates a large number of enterprises in the cement, shipbuilding and steel industries."

South African Steel Company Plans Ingot Capacity Expansion

London

• • • **Dr. H. J. Van der Bijl,** chairman of the South African Iron & Steel Industrial Corp. Ltd. (Iscor), in addressing the annual general meeting of the company at Pretoria, said that the excess demand over local production of rolled and drawn steel products in South Africa amounted to at least 440,000 tons and was likely to increase from year to year. It was against that background that Iscor's immediate extension project had to be considered.

The proposed extensions covered the construction of a steelworks at Vanderbijl Park (incorporating the plate mill already installed there) with an ingot capacity of about 360,000 tons per year, representing an output capacity of about 260,000 tons of various "flat" rolled products including plates, sheets, strip and tinplate.

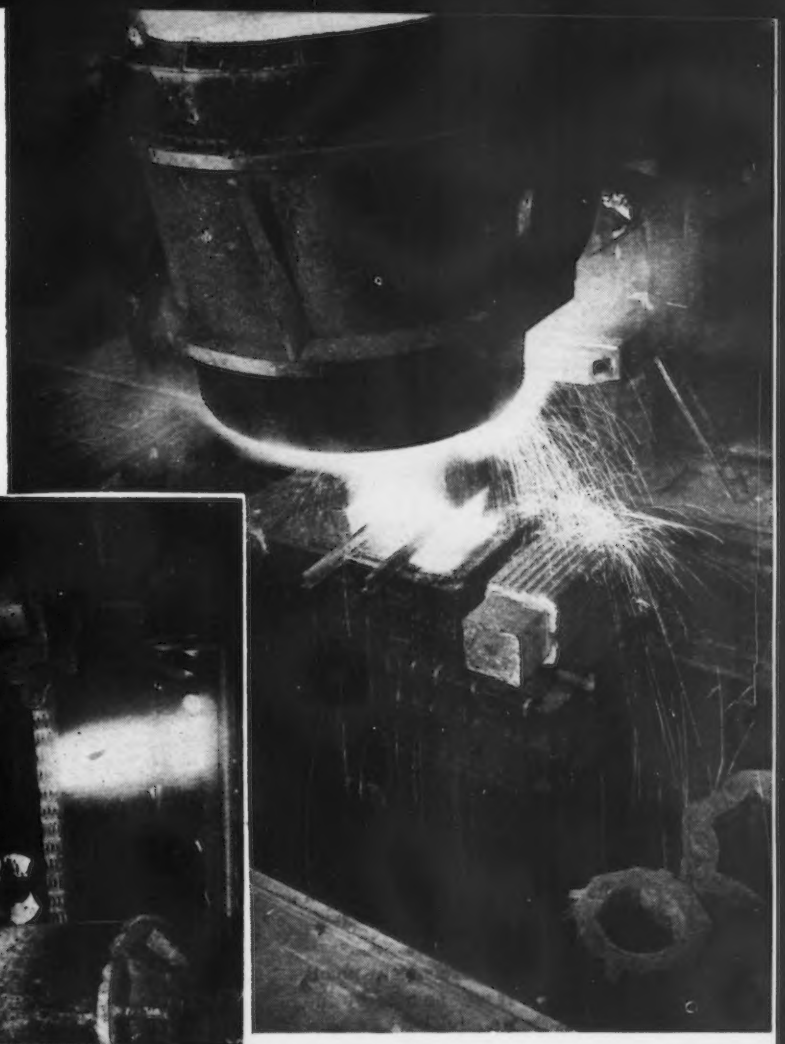
The new steelworks would comprise a coke oven plant, blast furnace plant, steel melting shop plant, slabbing mill, and continuous hot and cold strip mills operating in conjunction with the existing plate mill, together with the requisite finishing facilities. The plant would be laid out so as to be readily capable of extension up to an ultimate ingot capacity of about 1 million tons per year. There would also be additions at the Iscor works in Pretoria to the rolling mill and finishing facilities as well as extensions to ore mining equipment.

200 Million Volt Cyclatron In the Making

These photos show four stages—pouring, forging, machining and assembly of the 1100-ton cyclatron magnet to be used by University of Rochester scientists in the Navy's radiation research program. Carnegie-Illinois Steel Corp.'s Homestead Works cast eight full heats of open-hearth steel for the magnet components. The magnet will be but a single unit of a super cyclatron, or atom smasher, designed to produce particles of more than 200 million electron volts. The cyclatron of which the magnet is a part is the property of the Navy Office of Research and Invention. This is said to be the first time solid forgings were used on a project of this sort, replacing welded laminations formerly used. Although the U. S. Steel subsidiary has finished its part of the job it will be 2 years before the cyclatron will be completed and started on basic research in nuclear physics.

POURING

SOME 250 tons of white hot steel is teemed into an H-ingot mold at Carnegie's Homestead plant. The mold is so big that two 5-ton ingots were used as weights during the pouring process. This ingot is one of eight components of the huge new magnet.

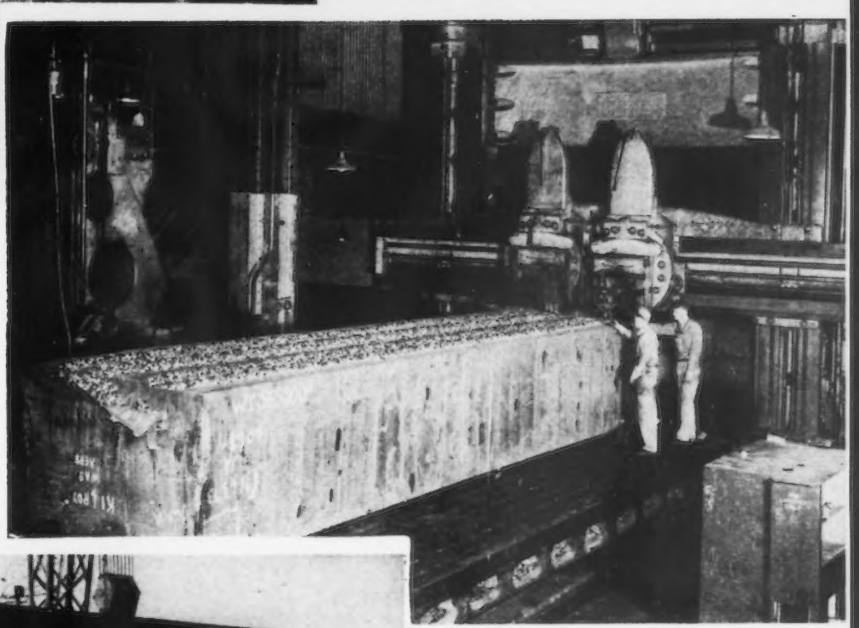


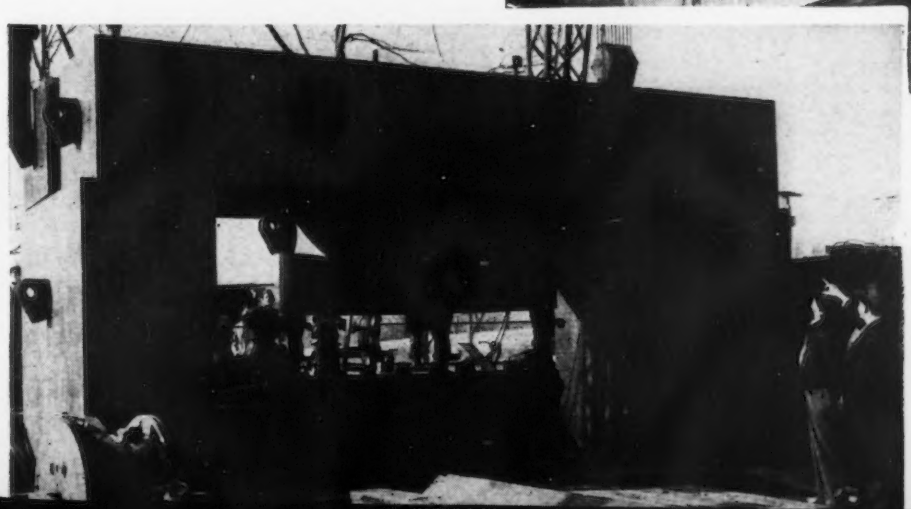
FORGING

A 7000-ton forging press, used at Homestead during the war for forging main driveshafts for the Navy's battleships, is put to work on a 389,000-lb ingot to shape a pole piece for the cyclatron magnet. The steel is of a mild magnetic composition containing a maximum of 15 points of carbon.

MACHINING

ONE of the side members for the cyclatron magnet on a huge planer at Carnegie's Homestead Works. After finishing this 365,000-lb piece it was bolted in place above the pole pieces of the magnet which will have an overall weight of 1100 tons as compared with the 15-ton magnet of the university's present 7 million volt atom smasher.





ASSEMBLY

SETTING up the cyclatron magnet on the campus at the University of Rochester. Construction of the magnet is under the supervision of Dr. Sidney W. Barnes, professor of physics at Rochester, second from right in foreground. It will be operated by the staff of the university's physics department, which is headed by Dr. George B. Collins.

Industrial Briefs . . .

• AWAITS APPROVAL — Pittsburgh-Des Moines Steel Co. is hopefully awaiting a go-ahead sign from the CPA for construction of a $700,000 plant on a 70-acre site on the Bayshore Highway near San Jose, Calif.

• NAMED TO SAE BOARD—J. M. Crawford, General Motors Corp.; R. M. Insley, Continental Motors Corp. and V. C. Young of Eaton Mfg. Co. have been appointed members of the SAE Technical Board which directs the program of technical activities carried on by the Society of Automotive Engineers. The appointment is for 3 years.

• TO PRODUCE PUMPS—The Fall Creek Ordnance Plant, Indianapolis, has been sold to the Food Machinery Corp., San Jose, Calif., for $861,000. The installation cost the government about $2,198,659. It will be used by the Peerless Pump Division to manufacture numerous types of pumps.

• GAS TURBINE POWER — Two locomotive chassis of independent designs for the first two experimental gas turbine locomotives burning powdered coal will be made by the American Locomotive Co. and the Baldwin Locomotive Works.

• CHANGE OF NAME—American By-Product Coke Institute announces that its corporate name has been changed to American Coke & Coal Chemicals Institute, Washington, D. C.

• TO HEAD GROUP—George N. Sieger, president of S-M-S Corp., Detroit, was elected president of the Resistance Welder Manufacturers Assn.

• WILL NOT MERGE — Consolidated Vultee and Lockheed have decided not to pursue the long discussed idea of merging the two corporations, according to Harry Woodhead and Robert Gross, presidents of the respective firms.

• NEW AIR FREIGHT SERVICE—Santa Fe Skyway, on Feb. 3, inaugurated a contract air-freight service between San Francisco and the Midwest. Skyway service between Los Angeles and the Chicago area has been in operation since July 1946.

• AUSTRALIAN PLANT — The Sheffield Corp. announces that a company has been formed in Australia for the production and sale of Sheffield gages, precision measuring instruments, machine tools and contract engineering and manufacturing services. It is incorporated as the Sheffield Corporation of Australia Pty. Ltd.

• ACQUIRES FOUNDRY — The J. I. Case Co., Racine, Wisc., has acquired the former Ordnance Steel Foundry located at Bettendorf, Iowa, for a cash bid of $1,250,000. The project originally cost the government $3,470,000. It will be converted to turning out steel and grey iron castings for machinery manufacture.

• BUYS STRIP MILL PLANT—Noranda Mines Ltd., announced the purchase of the plant of Canada Strip Mills at Montreal East from War Assets Corp. A new company, Noranda Copper & Brass Ltd., is being formed to operate the plant. Bridgeport Brass Co., Bridgeport, Conn., will be associated in the operation of the new company, but Noranda will have financial control. The plant will be converted to the production of commercial copper and brass products.

• CONTRACT AWARD—A contract for the construction of a 223-ton steel pressure vessel to be used in testing underwater equipment at the new Naval Ordnance Laboratory, White Oak, Md., has been awarded to the Babcock & Wilcox Co. by the Charles H. Tompkins Co., of Washington.

Rapids-Standard Sets Up Profit-Sharing Plan

Detroit

• • • **Rapids-Standard Co.,** Inc. Grand Rapids, producers of material handling equipment have announced a new profit-sharing plan in which the company will contribute from 10 to 25 pct of yearly profits to a trust fund for the benefit of employees. The company employs about 300 workers.

The new plan will provide life insurance and annuity funds to supplement regular social security benefits for members after retirement at 65, death benefits before retirement and payments for disability.

All company members are eligible after 3 years' service.

Rapids-Standard also has a monthly bonus and Christmas bonus plan in addition to insurance and hospitalization plans to which the company and the employees contribute.

For each year of service and for each $100 earned yearly an employee will receive one share in the yearly profits which are to be transferred to the trust fund, it is announced. One-third of the yearly contribution to the fund will be used to purchase life insurance policies for participating members; the remaining balance will be invested in government securities. If the company fails to earn a profit during any year, funds already invested will be used to maintain members' insurance policies.

Changes MM Rating Rules

Washington

• • • **CPA has revoked** effective Feb. 15 its delegation of authority to assign MM (military ratings) and also adjusted its criteria for issuance of future CC ratings to cover military and Veterans' Administration needs.

PR-28 now states that CC ratings will be issued in cases where an essential item is needed in an emergency by the Army, Navy, Maritime Commission, the Veterans' Administration or the Atomic Energy Commission, to meet the requirements of their most urgent projects. In these cases a recommendation by designated officials in the Washington headquarters of these agencies is required.

Construction Steel . . .

• • • Fabricated steel awards this week included the following:

1000 **Tons,** Worcester, Mass., warehouse for Brockelman Bros., Inc., to Bethlehem Steel Co., Bethlehem, Pa.

1000 **Tons,** Los Angeles, boiler supports, boiler installation for city to Bethlehem Steel Co., Bethlehem, Pa., through Riley Stoker Co., Worcester, Mass.

995 **Tons,** Central Valley Project, Calif., cofferdam at Shasta Dam, Bureau of Reclamation, Denver, Spec. 1571, to American Bridge Co., Denver.

400 **Tons,** San Antonio, Tex., for San Antonio Transit Co. maintenance and service buildings to Muskogee Iron Works, Muskogee, Okla.

350 **Tons,** Tuscaloosa, Ala., addition to paper mill for H. K. Ferguson to Ingalls Iron Works, Birmingham.

200 **Tons,** Araby, Ariz., U. S. Bureau of Reclamation, specification 1616 awarded to Emsco Derrick & Equipment Co., Los Angeles.

110 **Tons,** Central Valley Project, Calif., SPRR bridge and farm bridges, Westley Wasteway, Delta-Mendota Canal, Bureau of Reclamation, Denver, Spec. 1535, to American Bridge Co., Denver.

100 **Tons,** Hatfield, Pa., to Frank M. Weaver Co.

• • • Fabricated steel inquiries this week included the following:

4000 **Tons,** Philadelphia, Yale & Towne Mfg. Co., building, through Turner Construction Co.

1800 **Tons,** State College, Pa., women's dormitory for Pennsylvania State College, to be rebid on Mar. 5.

1500 **Tons,** New York City, Triborough Bridge and Tunnel Authority of New York City.

560 **Tons,** Wood River, Ill., power line for Illinois Power Co.

500 **Tons,** Philadelphia, E. I. du Pont de Nemours Co. research laboratory, project halted.

500 **Tons,** Scranton, Pa., warehouse for the Murray Corp., due Feb. 1.

480 **Tons,** Brooklyn, Brooklyn Union Gas Co., extension to plant, through United Engineers & Constructors.

500 **Tons,** Carneys Point, N. J., E. I. du Pont de Nemours Co. addition to project.

400 **Tons,** Vandalia, Ill., highway bridge section W 2 F, State of Illinois.

350 **Tons,** Chicago, conveyor manufacturing building bids on Feb. 24.

200 **Tons,** Williamsport, Pa., Grit Publishing Co., addition to project.

175 **Tons,** Westchester, Pa., Denney Tag Co., addition to project.

160 **Tons,** Bedford City, Pa., Pennsylvania Dept. of Highways, underpass bridge, due Mar. 11.

150 **Tons,** Barstow, Calif., diesel shop for Santa Fe Railroad, all bids rejected.

140 **Tons,** Chicago, factory for Sherwin Williams Co. abandoned.

• • • Reinforcing bar awards this week included the following:

425 **Tons,** Minnesota, elevators for Archer Daniels Co. through Fegals Construction Co. to Truscon Steel Co.

160 **Tons,** Burlington, Vt., dormitory for University of Vermont to Truscon Steel Co., Boston, through Cambridge, Mass., contractor.

• • • Reinforcing bar inquiries this week included the following:

660 **Tons,** Odair, Wash., Grand Coulee pumping plant, Bureau of Reclamation, Denver, Inv. G-38,244-A, bids to Feb. 14.

380 **Tons,** Odair, Wash., Grand Coulee machine shop, Bureau of Reclamation, Denver, Inv. G-38,244-A, bids to Feb. 14.

360 **Tons,** San Mateo Co., Calif., three bridges and substructures for two railroad overheads, Bayshore Freeway, California Div. of Highways, Sacramento, bids to Mar. 12.

300 **Tons,** Wisconsin, highway letting on state highways for State of Wisconsin.

250 **Tons,** Casper, Wyo., Kortes powerplant, Bureau of Reclamation, Denver, Inv. 19,546-A, bids to Feb. 14.

205 **Tons,** Urbana, Ill., mechanical engineering building for University of Illinois. All bids formerly rejected now to be rebid Feb. 27.

140 **Tons,** Odair, Wash., Grand Coulee left powerplant, Bureau of Reclamation, Denver, Inv. G-33,187-A-1, bids to Feb. 14.

• • • Railroad car awards this week included the following:

Norfolk & Western RR. has placed an order for 22 stainless Pullman cars with Budd Co.

New York City Board of Transportation has ordered 10 stainless steel subway cars from the Budd Co. The Wheeling & Lake Erie RR. has ordered 100 70-ton hopper cars from the Greenville Steel Car Co. and has also ordered 250 50-ton box cars from American Car & Foundry Co. Canadian National Railways has placed an order with National Steel Car Co., Hamilton, Ont., for construction of 250 all-steel 50-ton capacity ore cars. The new cars will be for use in handling iron ore from the Steel Rock Iron Mines near Atikokan, Ont.

• • • Railroad car inquiries this week included the following:

The Seaboard Airline RR. is inquiring for 300 70-ton steel hopper cars.

Firm in New Mexico Planning New Factory

Albuquerque, N. M.

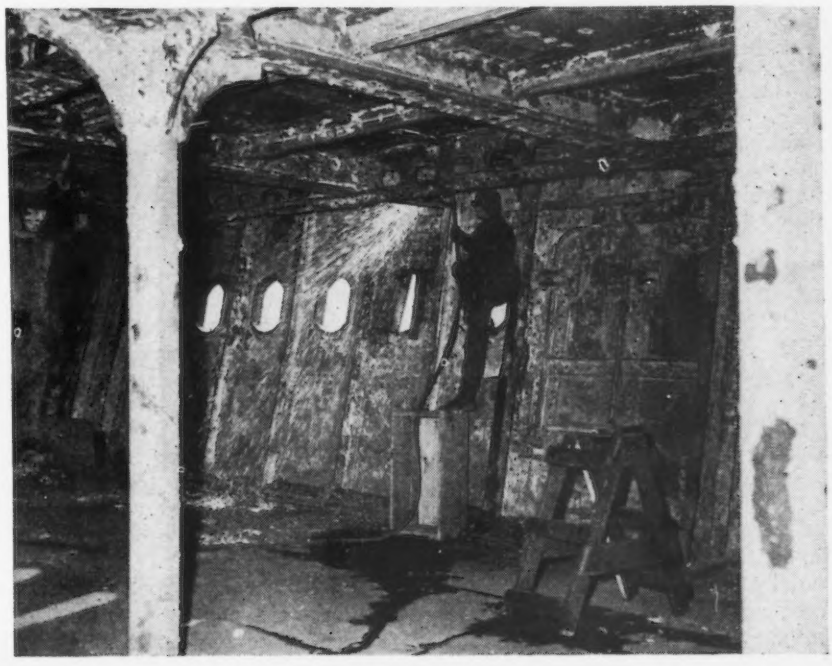
• • • New Mexico will soon have a new foundry employing 300 to 350 persons, according to plans now under way here. The Associated Manufacturing & Foundry Co., following its first annual stockholders meeting here early this month, disclosed plans to acquire land and erect a new building for the purpose.

The corporation will produce gray iron, white iron, semisteel, and nonferrous castings, and will manufacture agricultural implements, farm machinery, gates and valves for irrigation, soil pipe, plumbing fixtures, welding rod, and numerous other items.

A modern building 100 x 200 ft. will house the immediate facilities, all of which are to be mechanized, including overhead sand conditioning, continuous pouring, automatic shake-out, shot blast, etc. Orders for requisite machinery and equipment are expected to be placed shortly, through nationally known manufacturers.

The following were elected to the board of directors: George H. Wood, William Klein Sr., George H. Atkinson, Clifford D. Gibson, Dr. J. W. Schroer, R. M. Krannawitter; and the following officers were elected: George H. Wood, president; William Klein, Sr., vice-president; George H. Atkinson, secretary; and Clifford D. Gibson, treasurer. Mr. Wood was again chosen as chairman of the board.

RISKY SCRAPPER: *Perched precariously on an upper deck of the former liner Normandie this burner is cutting up part of the ship that once proved an embarrassing headache to the U. S. Navy, and subsequently was sold for scrap. Lipsett, Inc., is wrecking the ship at Port Newark, N. J.*



MACHINE TOOLS

. . . News and Market Activities

Market Spottiness Causes Concern Among Machine Tool Makers

Some Quarters Fear That It Is Start of a Temporary Lull In New Order Volume

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• • • **A certain spottiness** which has characterized the machine tool market in recent weeks has finally become the cause of considerable concern among some segments of the industry where it is feared that the start of a temporary lull is at hand.

According to reports percolating through the trade, February has not been a good month orderwise, and some observers are predicting that March, April and May are likely to follow suit.

The spotty nature of the market at the moment was nowhere more evident last week than in the activities of one lathe maker, who had found February very quiet until an order for 48 machines came in and changed the situation and the month's showing completely. Some companies are selling as many machines on a monthly average as they did in the 1935-39 period, and at considerably higher prices, but their investments in new buildings are proportionately greater and industry shipments of $200 million a year are probably pretty close to the bare, postwar minimum for the industry.

The present machine tool market, variously affected by the ever-present Government-owned machine tool surplus, now finds some machine tool builders buying up their own machines from surplus for rebuilding. Whether this is the beginning of a trend it is difficult to decide, but the companies that are doing it are finding it sound business.

Machine tool builders in the Chicago area are experiencing less difficulty in obtaining castings and other material for their production schedules. However, costs, particularly on castings, have been tremendously increased in the past few months and some builders term new prices outrageously high. With the machine tool building industry one of the most highly competitive of major industry, it is not possible for the builders of machine tools to pass all the increased cost of raw materials along to the customer without the possibility of pricing themselves out of the market. Aside from being faced with high material costs, surplus tools which can be obtained at 20 to 25 pct of the original cost remain another thorn in the side of the builders.

The largest order of its kind placed in New England since the tooling-up days of the last war was that received by a Worcester firm from the Chinese Government for 50 rebuilt engine lathes. The order was arranged through UNRRA and shipments must be completed by Mar. 30. Additional export sales of new tools, mostly lathes, are reported, but the aggregate volume is not large. Some manufacturers' representatives who became very active a week ago are still going strong, but the rank and file are not doing much in actual bookings, but report an encouraging number of quotations outstanding.

Among the "displaced persons" in the Detroit area are many of the employees who formerly kept careful watch over the machine tool producers' once extensive backlogs. While machine tool back-orders have not vanished from the Detroit scene by any means, and producers who enjoy a large export business are still able to schedule production several months ahead, producers of standard machines and even many builders of special tools have a gloomy outlook these days that can hardly be explained by the weather.

The hold-ups in plans for introducing new models, competition from surplus and general industrial uncertainty pending the outcome of important labor negotiations in the steel and automotive industries have combined to reduce machine tool activity in this area far below the wartime and postwar pace.

There is evidence of a little stirring on behalf of the Cleveland-Chevrolet light car project which comes up for review March 15. It is reported, for example, that in some instances shipping dates have been assigned for equipment that will require extensive development work although there are, as yet, no indications of building commitments.

The Ford transmission development is being scanned rather carefully now that it has been established that a few Lincoln cars have been equipped with automatic transmissions of Detroit Gear Co. design. At the same time, there are indications that Ford's original thinking about the required number of automatic transmission sets has already been reduced by half and there are no signs that a final Ford decision on automatic transmissions has yet been made.

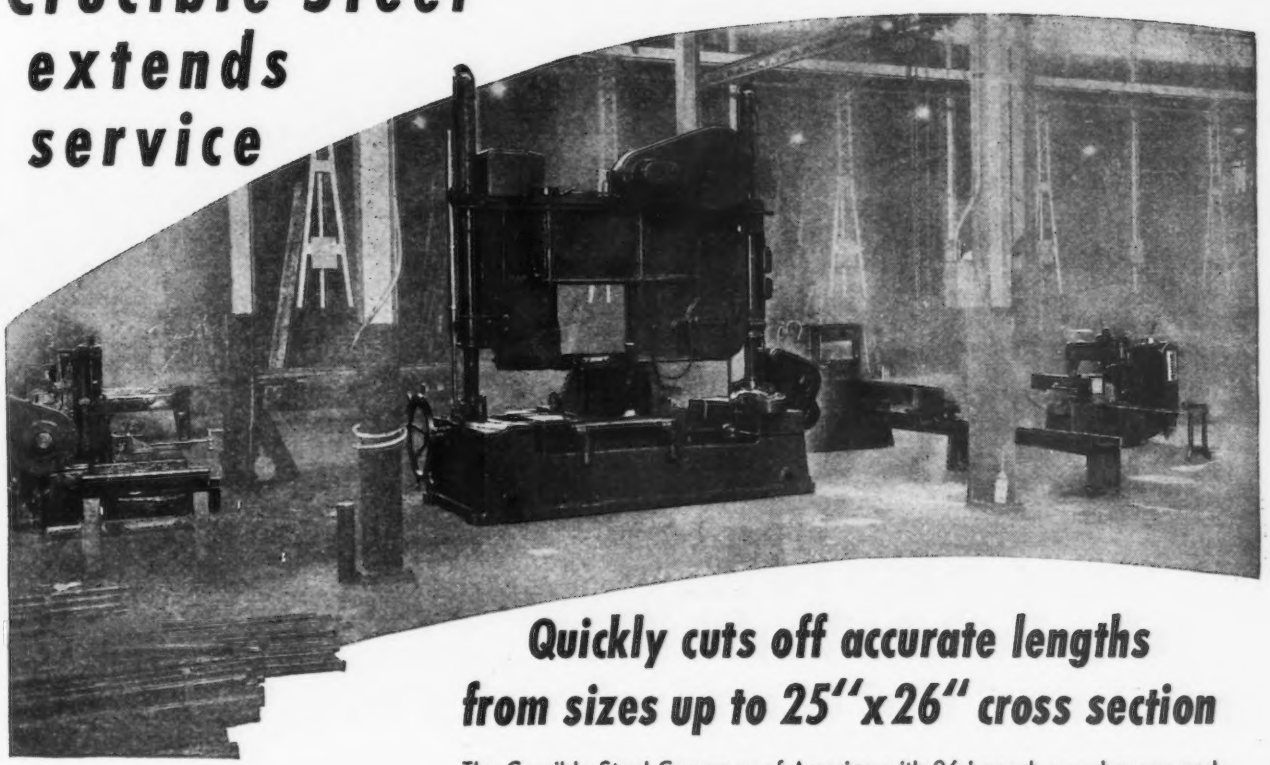
Machine tool builders in Detroit report the motor supply situation is unchanged but gray iron castings are a little easier.

In Cincinnati the machine tool market remains at about the same level as has been holding since the first of the year. Domestic ordering is still slow but fairly steady. Foreign business depends on governmental financial appropriations and so far is not outbalancing domestic trends.

Production remains at a steady level, with some plants operating on a 24-hr schedule. However, it is indicated that some of this is subcontracting work, or a particular job for immediate delivery.

No labor difficulties are apparent currently, although personnel departments indicate that a wider selection of skilled machinists would be acceptable.

Crucible Steel extends service



Quickly cuts off accurate lengths from sizes up to 25"x26" cross section

The Crucible Steel Company of America with 26 branch warehouses and sales offices, has built a reputation for anticipating customers' needs, not only in high grade and special steels, but in service requirements as well. They were among the first to equip several of their warehouses with modern high speed MARVEL Saws (No. 6 and 9A series) in order to give fast service on either single lengths or large quantities of identical pieces, accurately cut from bars up to 10" x 10" cross section. Now in anticipation of new demands for larger sizes, they are the first steel company to install a No. 24 MARVEL Hydraulic Hack Saw in order to give fast service on orders for steels of any type *in sizes up to* 25" x 26" cross section.

This giant hack saw, which almost qualified as a "secret weapon" because it contributed so materially to our production capacity in building naval ordnance, applies an entirely new principle of reciprocation that has made "hacksawing" of large work practical for the first time.

Whatever your metal sawing problems, there is a MARVEL Saw exactly suited to your needs. A MARVEL field engineer will be glad to go over your metal sawing problems with you.

No. 24 MARVEL giant Hydraulic Hack Saw. (capacity 24" x 24"). Employs new "Roll Stroke" sawing action and trouble-free low pressure hydraulic control.

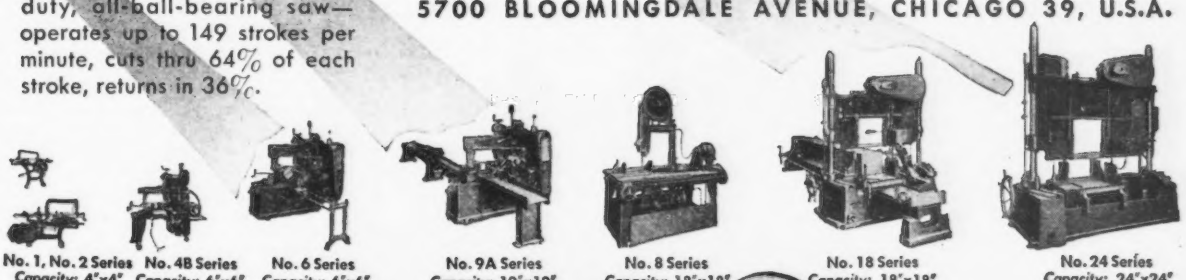
No. 9A MARVEL Production Saw (capacity 10" x 10"). Automatically feeds, measures and cuts-off identical lengths from single or nested bars with no more operator attention than an automatic screw machine.

No. 6 MARVEL Saw (capacity 6" x 6"). A high-speed, heavy-duty, all-ball-bearing saw—operates up to 149 strokes per minute, cuts thru 64% of each stroke, returns in 36%.

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 BLOOMINGDALE AVENUE, CHICAGO 39, U.S.A.



No. 1, No. 2 Series Capacity: 4"x4" Capacity: 6"x6" | No. 4B Series Capacity: 6"x6" | No. 6 Series Capacity: 6"x6" | No. 9A Series Capacity: 10"x10" | No. 8 Series Capacity: 18"x18" | No. 18 Series Capacity: 18"x18" | No. 24 Series Capacity: 24"x24"

MARVEL SAWS

NONFERROUS METALS

. . . News and Market Activities

Two Midwest Brass Mills Await WAA Disposition

New York

• • • **The War Assets** Administration has not yet announced its decision on the award of the Indianapolis plant operated during the war by the Bridgeport Brass Co. However it is understood that the bid offered by the Garrett Metal Mfg. Co., Chicago, has been rejected. Garrett's overall bid for plant and equipment is reported to have been appreciably higher than the $3.2 million bid by Bridgeport. The latter's bid however called only for most of the rolling equipment exclusive of the plant and is estimated to have exceeded Garrett's machinery bid by $1.5 to $2 million. The WAA has requested Bridgeport Brass to restudy its proposal with a view toward increasing the bid. It is understood that the company is unwilling to go along with this suggestion.

The Chicago brass mill operated during the war by Revere Copper & Brass, Inc. is no further along toward disposition than it was months ago. Garrett Metal Mfg. Co. also submitted a bid for this plant but an award was not made. Revere's bid was for some of the equipment but in the absence of early action by WAA the mill was forced to place orders for new mill equipment which will not be delivered until 1948. In the meantime its rolling mill operations are somewhat reduced as compared with production with existent DPC equipment.

•

Raise Cadmium Price

New York

• • • **Cadmium producers** have announced price increases to $1.75 per lb for sticks or anodes in ton lots, and $1.80 for ball anodes. The price increase is expected to bring the official price closer into line with the twilight market in which prices have been quoted as high as $2.50 per lb. These concealed prices are not reflected in the prices published by trade journals and since sales are normally made on those published prices there is some discrepancy in the two sets of prices. Although cadmium is a byproduct of lead and zinc production, there is not likely to be any significant additional tonnage brought out by the increase. However, further fume recovery in the bag house and by means of Cottrell precipitators may be encouraged by the higher price. It is probable also that the higher price may encourage some cadmium platers to turn to bright zinc and thereby relieve the pressure on available supplies to that extent.

Nonferrous Metals Prices

Cents per pound

	Feb. 12	Feb. 13	Feb. 14	Feb. 15	Feb. 17	Feb. 18
Copper, electro, Conn.	19.50—20.50	19.50—20.50	19.50—20.50	19.50—20.50	19.50—20.50	19.50—20.50
Copper, Lake, Conn.	19.625	19.625	19.625	19.625	19.625	19.625
Tin, Straits, New York	70.00	70.00	70.00	....	70.00	70.00
Zinc, East St. Louis	10.50	10.50	10.50	10.50	10.50	10.50
Lead, St. Louis	12.80	12.80	12.80	12.80	12.80	12.80

•

Canada Raises Tin Price

Ottawa

• • • **To eliminate** trading losses in the importation and sale of tin, Wartime Prices and Trade Board, has announced an increase in the Canadian base ceiling price of tin from 63½¢ to 71¢ per lb. The Board also announced corresponding price adjustments in scrap materials and nonferrous ingots containing tin.

Board officials said the step was taken in line with the general import policy to reduce or eliminate import subsidies where world prices are approaching a reasonable degree of stability.

While price increases have been granted in the base price of tin no provision has been made for automatic price increases for products containing tin and it is pointed out that manufacturers who cannot absorb the increase must apply to the Board for price adjustments.

•

Raise Tungsten Prices

New York

• • • **Increases in** the prices of ferrotungsten and tungsten powder have been announced by Electro Metallurgical Sales Corp. The new prices become effective Mar. 1 for contract users and immediately on a spot basis.

The increase in ferrotungsten amounts to 10¢ per lb of contained tungsten, making the new Eastern Zone contract price $1.98 in lots of 10,000 lb of contained tungsten. Tungsten powder prices are increased 15¢ a lb, making the price for the melting grade $2.65 in the Eastern Zone in lots of 1000 lb or more. Quantity, zone, and spot differentials remain unchanged.

Eliminates More Items From CPA Critical List

Washington

• • • **Nearly 30 items,** formerly included in the critical products list under Schedule 1, PR-28, dated Dec. 4, 1946, have been dropped from the latest CPA list of materials for which the agency's assistance might be given.

On the list are electrical high silicon sheet steel, lead, alcohol and rubber. Other eliminated materials are as follows:

Normal butyl, industrial ethyl and synthetic alcohols; special listed building board machinery; high grade metallurgical and by-product stoking coal; coal mining machinery; specialized clay building products machinery; clay building products except clay sewer pipe and fittings; cement, except for capital equipment replacement; castings except iron soil pipe and fittings and cast iron pressure pipe.

Also, concrete building products and specialized concrete building products machinery; specialized machinery for gypsum board and lath; fractional hp motors; penicillin; screwed pipe fittings; kitchen sinks and sink and tray combinations; laundry trays and shower stalls.

Also, mechanical presses (over 150 tons); pulpwood; resin; streptomycin; titanium oxide; copper magnet wire; wood pulp; and woodworking machinery.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb)	15.00
Aluminum pig, f.o.b. shipping point	14.00
Antimony, American Laredo Tex.	28.25
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	$14.75
Beryllium aluminum, 5% Be; dollars per lb contained Be	$27.50
Cadmium, del'd	$1.75
Cobalt, 97-99% (per lb)	$1.50 to $1.57
Copper, electro, Conn. Valley	19.50 to 20.50
Copper, lake, Conn. Valley	19.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110.00
Lead, St. Louis	12.80
Lead, New York	13.00
Magnesium, 99.8 + %	20.50
Magnesium, sticks, carlots	36.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$88 to $90
Nickel, electro, f.o.b. New York	37.67
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$58 to $61
Silver, New York, cents per oz.	70.75
Tin, Straits, New York	70.00
Zinc, East St. Louis	10.50
Zinc, New York	11.005
Zirconium copper, 6 pct Zr, per lb contained Zr	$ 6.00

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

85-5-5-5 ingot	
No. 115	20.50
No. 120	20.00
No. 123	19.50
80-10-10 ingot	
No. 305	23.50
No. 315	22.00
88-10-2 ingot	
No. 210	25.75
No. 215	24.75
No. 245	21.75
Yellow ingot	
No. 405	16.25
Manganese Bronze	
No. 421	18.25

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys:	
0.30 copper, max.	18.25
0.60 copper, max.	18.00
Piston alloys (No. 122 type)	17.00
No. 12 alum. (No. 2 grade)	16.25—16.75
108 alloy	16.50—16.75
195 alloy	16.75—17.50
AXS-679	16.50—16.75
Steel deoxidizing aluminum, notch-bar, granulated or shot.	
Grade 1—95 pct-97½ pct	17.00
Grade 2—92 pct-95 pct	16.25
Grade 3—90 pct-92 pct	15.75
Grade 4—85 pct-90 pct	15.50

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	34⅞
Electrodeposited	28⅝
Rolled, oval, straight delivered	29½
Curved, 18 in. or longer, delivered	29⅛
Brass, 80-20, frt allowed	
Cast, oval, 15 in. or longer	31⅝
Zinc, Cast, 99.99	18¾
Nickel, 99 pct plus, frt allowed	
Cast	51
Rolled, depolarized	52
Silver, 999 fine	
Rolled, 1000 oz lots, per oz.	75

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	34.00
Copper sulphate, 99.5, crystals, bbls	7.75
Nickel salts, single, 425 lb bbls, frt allowed	14.50
Silver cyanide, 100 oz lots, per oz	74.5
Sodium cyanide, 96 pct, domestic, 100 lb drums	15.00
Zinc cyanide, 100 lb drums	33.00
Zinc, sulphate, 89 pct, crystals, bbls, frt allowed	.0635

Mill Products

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall: 3S, 43.5¢; 52S-O, 67¢; 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢ 75S, 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 37.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢; 1in., 2 in., 27¢; base, 5000 lb. *Rod:* 2S, 3S, 1¼ to 2½ in. diam, rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. *Round Wire:* drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢. B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

Magnesium

(Cents per lb, f.o.b. mill)

Sheet and Plate: Ma, FSa, ¼ in.,54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 14, 69¢-74¢; 16, 79¢-81¢; 18, 87¢-89¢; 22, $1.25-$1.31; 24, $1.71-$1.75. Base quantity, 30,000 lb.

Round Rod: M, diam in. ⅛, 55¢; ¼, 47¢; ⅜, 46¢; ½, 45¢; ¾, 44¢; 1¾, 43.5¢; 2, 42.5¢; 3, 41.5¢; 4, 42.5¢ 5, 43.5¢; 6 & 7 in., 44¢. Base price, 5000-10,000 lb.

Square and Hexagonal Bar: M, diam in. ⅛, 58¢; ¼, 50¢; ⅜, 48¢; ½, 47.5¢; ¾, 46.5¢; 1¾, 45.5¢; 2, 44.5¢; 3, 43.5¢; 4 & 5 in. 44.5¢; 6 & 7 in., 45¢. Base quantity, 5000-10,000 lb.

Tubing: Varies with wall thickness and outside diameter.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	54	43
No. 35 sheets	..	41
Strip, cold-rolled	60	44
Rod		
Hot-rolled	50	39
Cold-drawn	55	44
Angles, hot-rolled	50	39
Plates	52	41
Seamless tubes	83	71
Shot and blocks	..	31

Zinc

(Cents per lb, f.o.b. mill)

Sheet, l.c.l.	15.50
Ribbon, ton lots	14.50
Plates	
Small	13.25
Large, over 12 in.	14.25
Lithographic, ungrained	17.25

Copper, Brass, Bronze

(Cents per lb)

	Extruded Shapes	Rods	Sheets
Copper	30.78	....	30.93
Copper, hot-rolled	....	27.28	....
Copper, drawn	....	28.28	....
Low brass, 80 pct	37.52	28.71	29.02
High brass	36.03	27.22	27.53
Red brass, 85 pct	38.03	29.22	29.53
Naval brass	27.50	26.25	32.19
Brass, free cutting	....	22.28	....
Commercial bronze	39.06	30.25	30.56
Manganese bronze	31.07	29.57	35.69
Phosphor bronze, 5 pct	....	49.07	48.82
Muntz metal	27.19	25.94	30.38
Everdur, Herculoy Olympic, etc.	34.45	34.73	35.79
Nickel silver, 5 pct	....	38.11	36.34
Architectural bronze	26.01	....	....

Scrap Metals

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Brass Mill Scrap

(Lots of 15,000 lb or less)

Cartridge brass turnings	12⅞
Loose yellow brass trimmings	13⅜

Copper and Brass

No. 1 heavy copper and wire	16 —16½
No. 2 heavy copper and wire	15 —15½
Light copper	13¼—13¾
Auto radiators (unsweated)	10¾—11¼
No. 1 composition	14 —14½
No. 1 composition turnings	13½—14
Clean red car boxes	10½—11
Cocks and faucets	12 —12¼
Mixed heavy yellow brass	8¾— 9
Old rolled brass	8¾— 9
Brass pipe	11½—11¾
New soft brass clippings	11½—11¾
Brass rod ends	11½—11¾
No. 1 brass rod turnings	11¼—11½

Aluminum

Alum. pistons with struts	4½— 5
Aluminum crankcases	8¼— 8½
2S aluminum clippings	8¼— 8½
Old sheet & utensils	7 — 7½
Mixed borings and turnings	2½— 3
Misc. cast aluminum	6¾— 7
Dural clips (24S)	5¾— 6

Zinc

New zinc clippings	7 — 7½
Old zinc	5¼— 5¾
Zinc routings	3 — 3½
Old die cast scrap	3 — 3¼

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	19½—20½
Nickel rod ends	20 —21
New Monel clippings	14 —15
Clean Monel turnings	9 —10
Old sheet Monel	12 —12½
Old Monel castings	10 —11
Inconel clippings	10 —11
German silver clippings, mixed	10½—11
German silver turnings, mixed	7 — 7¼

Lead

Soft scrap lead	11 —11½
Battery plates (dry)	6¼— 6½

Miscellaneous

Block tin	60
No. 1 pewter	46 —48
No. 1 auto babbitt	36 —37
Mixed common babbitt	12 —12½
Solder joints	14 —14½
Siphon tops	38 —39
Small foundry type	15 —15½
Monotype	12½—13
Lino and stereotype	12 —12½
Electrotype	10 —10½
New type shell cuttings (nom.)	12 —12½
Clean hand picked type shells	5½— 6
Lino and stereo dross	6 — 6½
Electro dross	4 — 4½

Lead Products

(Cents per lb)

F.o.b. shipping point freight collect. Freight equalized with nearest free delivery point.

Full lead sheets	16.25
Cut lead sheets	16.75
Lead pipe, manufacturing point	15.50
Lead traps and bends	List +38%
Combination lead and iron bends and ferrules, also combination lead and iron ferrules	List +38%
Lead wool	17.50

SCRAP

Disorganized Market Continues to Advance

New York

• • • Sharp heavy melting steel scrap price increases again highlighted the nation's disorganized scrap markets this week. As prices remained out of hand with no signs of stability, cross hauling and tie-in sales continued to upset normal market and distribution patterns.

In an attempt to inject some stability into the runaway market, directors of the Institute of Scrap Iron & Steel had scheduled an open dealers' meeting for early in the week in Cleveland. Scrap sources admitted the desperate nature of the price situation but were too optimistic of the outcome of the meeting.

Gains in the heavy openhearth grades ranged from $1 at New York to $3 at Buffalo but nowhere was there any indication that the skyrocketing prices of the past few weeks had substantially increased the volume of materials moving into the openhearths.

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PITTSBURGH—Scrap prices are still unsettled with further increases probable. Some buyers here are paying $35 a ton delivered and other consumers are buying at $35 a ton f.o.b. yard, which means an additional cost of about 71c a ton for transportation. Further, dealers and consumers report that any new sales of consequence would be for nearer to $40. Brokers, as a whole, are pretty short and yards do not seem to be holding back any scrap. Heavy breakable cast is not finding many buyers in this area, and one large scrap interest indicated that he was buying it at $35 f.o.b. Pittsburgh for shipment out of the district, with as much as $5 to $7 a ton freight. While turnings are not reflecting the strong heavy melting grade prices, low phos scrap is actually accentuating these prices, moving at $40 to $41 a ton, which is above the normal heavy melting—low phos spread. Scrap rails are also higher.

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CHICAGO — Prices held steady in this area last week. Better weather conditions have permitted more loading but volume remains low with mill inventories still suffering. One large mill, which had been content to permit its customers to ship earmarked scrap back to them through the regular dealer and broker channels, has decided to change the procedure. This mill claims that considerable scrap so consigned never reached the mill and from now on such scrap will be consigned direct to the mill and kept out of the regular established channels. Railroad specialty and cast items continue to bring premium prices.

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PHILADELPHIA—Mills here continue in serious need of scrap although there was no increase in the price of heavy melting grades last week. There was some readjustment of the price of low phos based on previously raised heavy melting prices. Railroad specialties have been increased $2. Scrap movement is not improving and some factors are of the opinion that there is likely to be no improvement while the ingot rate remains high.

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NEW YORK — Reflecting continuing desperate pressure for scrap, the heavy melting grades advanced $1 during the past week, with the lighter end of the list also moving up. Cast grades are still "all over the lot" although a $41 top prevailed for purchases for some of the large southern New Jersey foundries. Brokers blame tie-ins and cross hauling for the current booming market rather than any sudden decline in offerings.

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DETROIT—Prices of openhearth scrap moved upward again this week as Detroit buyers met fierce competition in their efforts to keep available scrap from moving out of this area to distant steel centers. There were some indications that Detroit buyers might have to go above $31.50 to cover on contracts to supply local users and bids as high as $26.50 delivered on turnings have been reported. Meanwhile several large buyers have not entered the market at these prices although one prominent buyer was reported to be paying $35 delivered for low phos grades.

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CLEVELAND—Scrap prices here and in the Valley are almost completely out of hand. Current quotations have only a nominal value since very little scrap can be bought at these prices. Shipments to one major consumer were off 100 cars this week. Remote scrap continues to bring higher prices and according to reports, one Valley consumer is currently paying $40 for No. 1 bundles. In an effort to stem the tide, some mills have refused offerings at $41 and $42 a ton, but the upward trend is so strong such action probably only delays the inevitable. The scrap market has become for all practical purposes an auction sale in which so many different prices are being paid that buyers and brokers are either unable or unwilling to say what the going prices are.

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BOSTON—Prices on turnings are higher and now more in line with those on heavy steel. Current sales of shoveling are generally at $24.50 a ton and on others at $23.50. A Providence firm reports the sale of chemical borings at $25 a ton, a new high. The trade is evidently well sold up on heavy steel, new bookings being almost nil this week. The local Navy Yard has a sale this week but guaranteed tonnages are small. Foundries are getting more pig iron and excitement in the cast market has subsided somewhat as a result.

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BUFFALO — Openhearth scrap jumped to 35 across-the- board this week when one of the leading consumers placed orders here for No. 1 and No. 2 heavy melting and bundles at that figure. The lighter grades, which have been lagging for months, also joined in the general advance. Short shovelings, quoted a week ago at $23.25, sold at $30 to $31, and machine shop turnings brought $28 to $29; an increase of more than $7 a ton. Cast iron borings, however managed to chalk up a gain of only about $4. Rail specialties were nominally unchanged, although a sale of railroad No. 1 melting was reported at $35 to a local mill.

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BIRMINGHAM — Openhearth grades were moving in volume to mills here at the beginning of the week on previous purchases but there had been no substantial sales to indicate the price on new commitments. Prices continued to advance on cast and foundry grades with one order for No. 1 cast reported to have brought $42.50 plus 50c brokerage.

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CINCINNATI — The iron and steel scrap situation is still highly erratic in the district this week, with prices uncertain, and some sources indicating that the price of $32 per ton on good grades is comparatively low. Some mills indicate that there is a great demand on the part of their customers for a "swap" procedure, but most of them in this area are holding out against this practice, and are allocating material as formerly. Some mills indicate their scrap situation is becoming desperate, since higher prices have not increased shipments.

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SAN FRANCISCO—West Coast prices for all grades of scrap do not reflect the increases in the East with but very minor exceptions. Machine shop turnings have gone up $1.50 in Los Angeles and No. 1 and No. 2 heavy melting have increased a similar amount in the Seattle area. The local scrap buyers for the major steel producers have made a change in policy of offering dealers anywhere on the Coast $19.04 for No. 1 and No. 2 heavy melting at dealers' yards, but the tonnage moved under this arrangement is very low.

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TORONTO — Business was slow during the past week, entirely due to lack of materials in the hands of dealers. Heavy snow cut scrap deliveries to urban centres and local dealers stated that receipts were negligible. The scrap shortage is steadily becoming more acute and while the steel mills have been obtaining some scrap incoming materials are only about 25 pct of actual needs. Foundries report little or no scrap on hand and nothing coming into the market. Prevailing low prices for scrap in the Canadian markets is no inducement to collectors and there is a tendency on the part of those with accumulations to hold off in the hope that ceilings may soon be lifted.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$35.00 to $36.00
RR. hvy. melting	35.00 to 36.00
No. 2 hvy. melting	35.00 to 36.00
RR. scrap rails	41.00 to 42.00
Rails 3 ft. and under	44.00 to 45.00
No. 1 comp'd bundles	35.00 to 36.00
Hand bdld. new shts.	35.00 to 36.00
Hvy. axle turn.	35.00 to 36.00
Hvy. steel forge turn.	35.00 to 36.00
Mach. shop turn.	28.50 to 29.00
Short shov. turn.	29.50 to 30.00
Mixed bor. and turn.	28.50 to 29.00
Cast iron borings	28.50 to 29.00
No. 1 cupola cast	42.00 to 43.00
Heavy breakable cast	36.00 to 37.00
Malleable	41.00 to 42.00
RR. knuck, and coup.	40.00 to 41.00
RR. coil springs	40.00 to 41.00
Rail leaf springs	40.00 to 41.00
Rolled steel wheels	40.00 to 41.00
Low phos.	40.00 to 41.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$32.00 to $32.50
No. 2 hvy. melting	32.00 to 32.50
No. 1 bundles	32.00 to 32.50
No. 2 dealers' bndls	32.00 to 32.50
Bundled mach. shop turn.	32.00 to 32.50
Galv. bundles	30.00 to 30.50
Mach. shop turn.	27.00 to 27.50
Short shovels, turn.	29.00 to 29.50
Cast iron borings	27.00 to 27.50
Mix. borings & turn.	24.50 to 25.00
Los. phos. hvy. forge	36.00 to 37.50
Low phos. plates	34.50 to 35.00
No. 1 RR. hvy. melt.	33.00 to 33.50
Reroll rails	44.75 to 45.50
Miscellaneous rails	39.00 to 40.00
Angles & splice bars	42.00 to 43.00
Locomotive tires, cut	40.00 to 43.00
Cut bolster & side frames	36.00 to 37.00
Standard stl. car axles	41.50 to 42.00
No. 3 steel wheels	38.25 to 38.75
Couplers & knuckles	39.50 to 40.00
Malleable	43.50 to 45.00
No. 1 mach. cast	43.50 to 45.00
Rails 2 ft. and under	43.00 to 45.00
No. 1 agricul. cast	38.00 to 38.50
Hvy. breakable cast	37.00 to 37.50
RR. grate bars	36.50 to 37.00
Cast iron brake shoes	39.00 to 39.50
Stove plate	36.00 to 38.50
Clean auto cast	37.00 to 40.00
Cast iron carwheels	37.00 to 38.00

CINCINNATI

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	32.00
No. 1 bundles	32.00
No. 2 bundles	32.00
Mach. shop turn.	$23.50 to 24.00
Shoveling turn.	24.50 to 25.00
Cast iron borings	23.50 to 24.00
Mixed bor. & turn.	23.50 to 24.00
Low phos. plate	30.50 to 31.00
No. 1 cupola cast	33.00 to 35.00
Hvy. breakable cast	31.00 to 33.00
Stove plate	28.00
Scrap rails	26.00

BOSTON

Dealers' buying prices per gross ton. f.o.b. cars

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	29.00 to 30.00
Nos. 1 and 2 bundles	29.00 to 30.00
Busheling	29.00 to 30.00
Turnings, shovelings	22.50 to 24.50
Machine shop turn	22.50 to 23.50
Mixed bor. & turn.	22.50 to 23.50
Cl'n cast. chem. bor.	24.00 to 25.00
No. 1 machinery cast	40.00 to 45.00
No. 2 machinery cast	40.00 to 45.00
Heavy breakable cast	40.00 to 45.00
Stove plate	40.00 to 45.00

DETROIT

Per gross, ton, brokers' buying prices. f.o.b. cars:

No. 1 hvy. melting	$29.75 to $30.25
No. 2 hvy. melting	29.75 to 30.25
No. 1 bundles	29.75 to 30.25
New busheling	29.75 to 30.25
Flashings	29.75 to 30.25
Mach. shop turn.	23.75 to 24.25
Short shov. turn.	24.75 to 25.25

[Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages.]

Cast iron borings	$24.25 to $24.75
Mixed bor. & turn.	23.25 to 23.75
Low phos. plate	32.75 to 33.25
No. 1 cupola cast	41.25 to 44.25
Hvy. breakable cast	37.25 to 39.25
Stove plate	37.25 to 39.25
Automotive cast	nominal

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	33.00 to 34.00
Mach. shop turn.	24.00 to 25.00
Shoveling turn.	27.00 to 28.00
Mixed bor. & turn.	24.00 to 25.00
Clean cast chemical bor.	31.00 to 32.00
No. 1 cupola cast.	45.00 to 47.00
Hvy. breakable cast	44.00 to 45.00
Cast. charging box	44.00 to 45.00
Clean auto cast	45.00 to 47.00
Hvy. axle forge turn.	33.00 to 34.00
Low phos. plate	35.50 to 36.50
Low phos. punchings	35.50 to 36.50
Low phos. bundles	34.50 to 35.50
RR. steel wheels	38.50 to 39.50
RR. coil springs	38.50 to 39.50
RR. malleable	44.00 to 45.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$32.25 to $33.00
Bundled sheets	32.25 to 33.00
Mach. shop turn.	27.25 to 28.00
Locomotive tires, uncut	34.50 to 35.00
Misc. std. sec. rails	37.00 to 38.00
Rerolling rails	40.00 to 41.00
Steel angle bars	35.00 to 37.00
Rails 3 ft. and under	40.00 to 41.00
RR. springs	36.50 to 37.00
Steel car axles	35.00 to 37.00
Stove plate	30.00 to 32.00
Grate bars	33.00 to 35.00
Brake shoes	33.00 to 35.00
Malleable	40.00 to 42.00
Cast iron carwheels	36.00 to 37.00
No. 1 machinery cast	37.00 to 38.00
Breakable cast	35.00 to 36.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$29.00 to $29.50
No. 2 hvy. melting	29.00 to 29.50
No. 2 bundles	29.00 to 29.50
No. 1 busheling	29.00 to 29.50
Long turnings	21.00 to 21.50
Shoveling turnings	27.50 to 28.00
Cast iron borings	21.00 to 21.50
Bar crops and plate	32.00 to 33.00
Structural and plate	32.00 to 33.00
No. 1 cast	38.00 to 39.00
Stove plate	35.00 to 36.00
Steel axles	35.50 to 36.00
Scrap rails	33.00 to 34.00
Rerolling rails	37.00 to 38.00
Angles & splice bars	37.00 to 38.00
Rails 3 ft & under	36.00 to 37.00
Cast iron carwheels	30.00 to 31.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$34.50 to $35.00
No. 2 hvy. melting	34.50 to 35.00
Low phos. plate	37.00 to 37.50
No. 1 busheling	37.00 to 37.50
Hydraulic bundles	37.00 to 37.50
Mach. shop turn.	28.50 to 29.50
Short. Shovel, turn.	28.50 to 29.50
Cast iron borings	28.50 to 29.50
Elec. furnace punch	34.00 to 34.50

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$30.50 to $31.00
No. 2 hvy. melting	30.50 to 31.00
Comp. black bundles	30.50 to 31.00
Comp. galv. bundles	28.00 to 28.50
Mach. shop turn.	23.50 to 24.00
Mixed bor. & turn.	23.50 to 24.00
Shoveling turn.	25.00 to 25.50
No. 1 cupola cast	40.50 to 41.00
Hvy. breakable cast	40.50 to 41.00
Charging box cast	$40.50 to $41.00
Stove plate	40.50 to 41.00
Clean auto cast.	40.50 to 41.00
Unstrip. motor blks	37.00 to 39.00
Cl'n chem. cast bor.	24.00 to 25.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$35.00
No. 1 bundles	35.00
No. 2 bundles	35.00
No. 2 hvy. melting	35.00
Mach. shop turn.	$28.00 to 29.00
Shoveling turn.	30.00 to 31.00
Cast iron borings	27.00
Mixed bor. & turn.	28.00 to 29.00
No. 1 cupola cast	35.00 to 40.00
Charging box cast	29.00 to 30.00
Stove plate	30.00 to 35.00
Clean auto cast	35.00 to 40.00
Malleable	40.00 to 42.00
Low. phos. plate	35.00 to 36.00
Scrap rails	29.75 to 30.25
Rails 3 ft. & under	33.75 to 34.25
RR. steel wheels	33.75 to 34.25
Cast iron carwheels	32.00 to 32.50
RR. coil & leaf spgs.	33.75 to 34.25
RR. knuckles & coup.	33.75 to 34.25
No. 1 busheling	35.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	32.00 to 33.00
Compressed sheet stl.	32.00 to 33.00
Drop forge flashings	32.00 to 33.00
No. 2 bundles	32.00 to 33.00
Mach. shop turn.	27.00 to 28.50
Short shovel	27.00 to 28.50
No. 1 busheling	32.00 to 33.00
Steel axle turn.	32.00 to 33.00
Cast iron borings	26.50 to 27.50
Mixed bor. & turn.	26.50 to 27.50
No. 1 machinery cast	37.50 to 40.00
Malleable	42.50 to 45.00
Railroad cast	40.00 to 42.50
Railroad grate bars	35.00 to 37.00
Stove plate	37.50 to 38.00
RR. hvy. melting	32.00 to 33.00
Rails 3 ft. & under	41.50 to 42.00
Rails 18 in. & under	42.50 to 43.00
Rails for rerolling	37.00
Elec. furnace punch	36.50 to 37.00

SAN FRANCISCO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50
No. 2 hvy. melting	19.50
No. 2 bales	19.50
No. 3 bales	16.00
Mach. shop turn.	13.00
Elec. furn. 1 ft. und.	19.50
No. 1 cupola cast.	32.00
RR. hvy. melting	20.50

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50
No. 2 hvy. melting	19.50
No. 1 bales	19.50
No. 2 bales	19.50
No. 3 bales	16.00
Mach. shop turn.	14.50
No. 1 cupola cast	25.00
RR. hvy. melting	20.50

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melting	$19.00
Elec. furn. 1 ft. und.	22.50
No. 1 cupola cast	29.00
RR. hvy. melting	20.00

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

* Ceiling price

Comparison of Prices . .

Advances over past week in **Heavy Type**, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel: (cents per pound)	Feb .18, 1947	Feb. 11, 1947	Jan. 14, 1947	Feb. 19, 1946
Hot-rolled sheets	2.50	2.50	2.50	2.425
Cold-rolled sheets	3.20	3.20	3.20	3.275
Galvanized sheets (10 ga.)	3.55	3.55	3.55	4.05*
Hot-rolled strip	2.50	2.50	2.50	2.35
Cold-rolled strip	3.20	3.20	3.20	3.05
Plates	2.65	2.65	2.65	2.50
Plates, wrought iron	5.95	5.95	5.95	4.112
Stain's c-r strip (No. 302) *24 ga	30.30	30.30	30.30	28.00
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.75	$5.75	$5.75	$5.00
Tinplate, electro (0.50 lb)	5.05	5.05	5.05	4.50
Special coated mfg. ternes	4.90	4.90	4.90	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.60	2.60	2.60	2.50
Cold-finished bars	3.20	3.20	3.20	3.10
Alloy bars	3.05	3.05	3.05	2.92
Structural shapes	2.50	2.50	2.50	2.35
Stainless bars (No. 302).	25.97	25.97	25.97	24.00
Wrought iron bars	6.15	6.15	6.15	4.76
Wire and Wire Products: (cents per pound)				
Bright wire	3.30	3.30	3.30	3.05
Wire nails	3.75	3.75	3.75	3.25
Rails: (dollars per 100 lb)				
Heavy rails	$2.50	$2.50	$2.50	$43.39*
Light rails	2.85	2.85	2.85	49.18*
*per net ton				
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$42.00	$42.00	$42.00	$39.00
Sheet bars	50.00	50.00	50.00	38.00
Slabs, rerolling	42.00	42.00	42.00	39.00
Forging billets	50.00	50.00	50.00	47.00
Alloy blooms, billets, slabs	61.00	61.00	61.00	58.43
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.55	2.55	2.55	2.30
Skelp	2.35	2.35	2.35	2.05

Pig Iron: (per gross ton)	Feb .18, 1947	Feb. 11, 1947	Jan. 14, 1947	Feb. 19, 1946
No. 2, foundry, Phila.	$32.51	$32.51	$32.43	$27.59
No. 2, Valley furnace	30.50	30.50	30.50	25.75
No. 2, Southern, Cin'ti	31.75	31.75	31.75	26.19
No. 2, Birmingham	26.88	26.88	26.88	22.13
No. 2, foundry, Chicago†	30.50	30.50	30.50	25.75
Basic, del'd eastern Pa.	33.67	33.67	31.93	27.09
Basic, Valley furnace	30.00	30.00	30.00	25.25
Malleable, Chicago†	30.50	30.50	30.50	25.75
Malleable, Valley	30.50	30.50	30.50	25.75
Charcoal, Chicago	42.99	42.99	42.99	42.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡ For cariots at seaboard

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$35.50	$35.50	$32.25	$20.00
Heavy melt'g steel, Phila.	33.50	33.50	31.00	18.75
Heavy melt'g steel, Ch'go	32.25	32.25	29.75	18.75
No. 1, hy. comp. sheet, Det.	30.00	28.50	27.00	17.32
Low phos. plate, Youngs'n	37.25	37.25	34.25	22.50
No. 1, cast, Pittsburgh	42.50	42.50	40.38	20.00
No. 1, cast, Philadelphia	46.00	46.00	41.50	20.00
No. 1, cast, Chicago	44.25	44.25	42.50	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$9.00	$8.75	$8.75	$7.50
Foundry coke, prompt	10.25	8.50	8.50	9.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	19.75	19.75	19.50	12.00
Copper, Lake, Conn.	19.625	19.625	19.625	12.00
Tin, Straits, New York	70.00	70.00	70.00	52.00
Zinc, East St. Louis	10.50	10.50	10.50	8.25
Lead, St. Louis	12.80	12.80	12.80	6.35
Aluminum, virgin	15.00	15.00	15.00	15.00
Nickel, electrolytic	37.67	37.67	37.67	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	28.25	28.25	28.25	14.50

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 30 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Feb. 18, 1947	2.87255¢ per lb.	$30.15 per gross ton.	$33.75 per gross ton.
One week ago	2.87255¢ per lb.	$30.15 per gross ton.	$33.75 per gross ton.
One month ago	2.87255¢ per lb.	$30.14 per gross ton.	$31.00 per gross ton.
One year ago	2.54490¢ per lb.	$25.37 per gross ton.	$19.17 per gross ton.

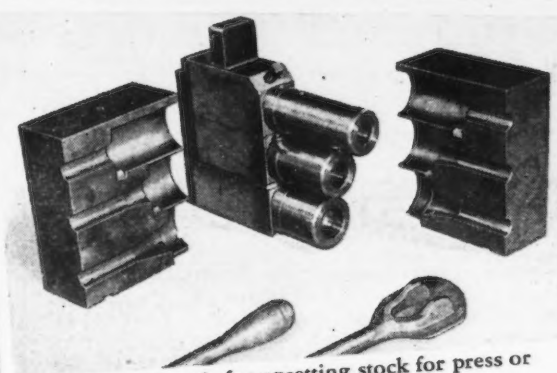
	FINISHED STEEL HIGH	FINISHED STEEL LOW	PIG IRON HIGH	PIG IRON LOW	SCRAP STEEL HIGH	SCRAP STEEL LOW
1947	2.87255¢	2.87255¢	$30.15 Jan. 28	$30.14 Jan. 7	$33.75 Feb. 11	$31.00 Jan. 7
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	$30.14 Dec. 10	$25.37 Jan. 1	$31.17 Dec. 24	$19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 2
1943	2.29176¢	2.29176¢	23.61	25.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 4
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941, issue.

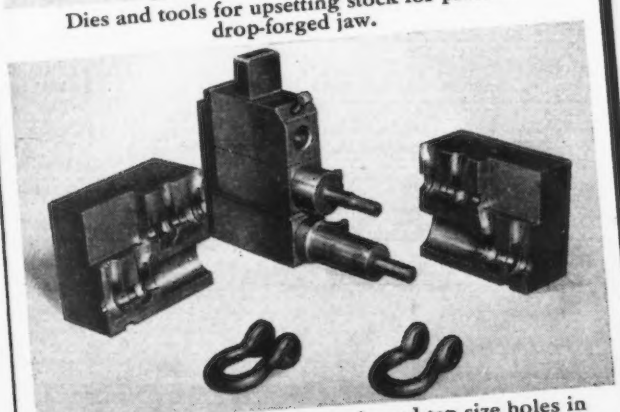
Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia, and Chicago.

ADVANTAGES OF AJAX FORGING MACHINES in Conjunction with Hammers and Forging Presses



Dies and tools for upsetting stock for press or drop-forged jaw.



Upsetter dies for punching pin and tap size holes in drop-forged shackle.

Many forgings require the balling up of stock on the ends of bars to provide sufficient volume of metal to fill the impressions of the hammer or press dies. This operation can be done faster and more economically on Ajax Air Clutch Forging Machines than by drawing or fullering the shank from large stock.

On other forgings, the upsetter can be used to supplement the press or hammer for punching holes, trimming flash, ironing out draft or upsetting flanges which cannot be formed in the press or hammer dies.

Write for Bulletin No. 65-B

THE AJAX MANUFACTURING COMPANY

EUCLID BRANCH P. O. CLEVELAND 17, OHIO

110 S. DEARBORN ST. CHICAGO 3, ILLINOIS

DEWART BUILDING NEW LONDON, CONN.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 25c above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25c per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) This base price for annealed, bright finish wires, commercial spring wire. (11) Boxed. (12) Produced to dimensional tolerances in AISI Manual Sec. 6. (13) Delivered San Francisco only; includes 3 pct freight tax. (14) Delivered Kaiser Co. prices; includes 3 pct freight tax. (15) 0.035 to 0.075 in. thick by ¾ to 3⅛ in. wide. (16) Some producers are charging 2.75¢.

Basing Points	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		San Francisco, Los Angeles, Seattle	DELIVERED TO Detroit	New York	Philadelphia
INGOTS															
Carbon, rerolling	($35.00 f. o. b. mill)														
Carbon, forging	$40.00	$40.00	$40.00	$40.00	$40.00	$40.00	$40.00								
Alloy	$52.00	$52.00				$52.00	(Bethlehem, Massillon, Canton, Coatesville=$52.00)								
BILLETS, BLOOMS, SLABS						(Provo=$53.20)									
Carbon, rerolling	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00					$45.00		
Carbon, forging billets	$50.00	$50.00	$50.00	$50.00	$50.00	(Provo=$61.20, Duluth=$52.00[13]) $50.00	$50.00						$53.00		
Alloy	$61.00	$61.00				$61.00	(Bethlehem, Massillon, Canton=$61.00)						$64.00		
SHEET BARS							$50								
PIPE SKELP	2.35¢	2.35¢					2.35¢	2.35¢	(Coatesville=2.35¢)						
WIRE RODS	2.55¢	2.55¢		2.55¢	2.55¢	(Worcester=2.65¢)						3.27¢[13]			
SHEETS															
Hot-rolled	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.875¢	2.50¢			2.65¢	2.79¢	2.70¢
Cold-rolled [1]	3.20¢	3.20¢	3.20¢	3.20¢		3.20¢	3.20¢		3.30¢				3.35¢	3.61¢	3.58¢
Galvanized (10 gage)	3.55¢	3.55¢	3.55¢		3.55¢		3.55¢	3.55¢	3.65¢					3.84¢	3.75¢
Enameling (12 gage)	3.55¢	3.55¢	3.55¢	3.55¢			3.55¢		3.65¢				3.70¢	3.95¢	3.93¢
Long ternes [2] (10 gage)	3.55¢	3.55¢	3.55¢											3.95¢	3.91¢
STRIP															
Hot-rolled [3]	2.50¢	2.50¢	2.50¢	2.50¢[15]	2.50¢		2.50¢						2.65¢	2.93¢	2.88¢
Cold-rolled [4]	3.20¢	3.30¢		3.20¢			3.20¢			(Worcester=3.47¢)			3.35¢	3.61¢	3.58¢
Cooperage stock	2.80¢	2.80¢			2.80¢		2.80¢							4.09¢	
TINPLATE															
Standard cokes, base box	$5.75	$5.75	$5.75		$5.85			$5.85	$5.85		(Warren, Ohio=$5.75)		$6.157	$6.062[11]	
Electro, box { 0.25 lb	Deduct 90¢ from standard coke base box price.														
0.50 lb	Deduct 70¢ from standard coke base box price.														
0.75 lb	Deduct 50¢ from standard coke base box price.														
BLACKPLATE 29 gage [5]	3.60¢	3.60¢	3.60¢		3.70¢			3.70¢	3.70¢		(Warren, Ohio=$5.75)			3.99¢	3.90¢
TERNES, MFG. Special coated, base box	Deduct 85¢ from standard coke base box price.														
BARS															
Carbon steel	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢					3.285¢	2.75¢	3.01¢	2.98¢
Rail steel [6]	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢									
Reinforcing (billet) [7]	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢				2.985¢	2.60¢	2.74¢	2.65¢
Reinforcing (rail) [7, 16]	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢	2.60¢						2.75¢		
Cold-finished [8]	3.20¢	3.20¢	3.20¢	3.20¢		3.20¢	(Detroit=3.25¢)							3.61¢	3.58¢
Alloy, hot-rolled	3.05¢	3.05¢				3.05¢	3.05¢	(Bethlehem, Massillon, Canton=3.05¢)					3.20¢		3.19¢
Alloy, cold-drawn	3.80¢	3.80¢	3.80¢	3.80¢		3.80¢							3.95¢		
PLATE								(Coatesville, Claymont=2.80¢, Geneva Utah=2.80¢)							
Carbon steel [12]	2.65¢	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢	2.65¢				3.46¢[14]		2.87¢	2.85¢
Floor plates	3.90¢	3.90¢												4.30¢	4.28¢
Alloy	3.79¢	3.79¢			(Coatesville=4.10¢)									4.01¢	3.895¢
SHAPES Structural	2.50¢	2.50¢	2.50¢		2.50¢	2.50¢	(Geneva, Utah=2.65¢) (Bethlehem=2.50¢)					3.41¢[14]		2.70¢	2.64¢
SPRING STEEL, C-R															
0.26 to 0.50 carbon	3.55¢			3.55¢			(Worcester=3.75¢)								
0.51 to 0.75 carbon	4.80¢			4.80¢			(Worcester=5.00¢)								
0.76 to 1.00 carbon	6.65¢			6.65¢			(Worcester=6.85¢)								
1.01 to 1.25 carbon	8.85¢			8.85¢			(Worcester=9.05¢)								
MANUFACTURERS' WIRE [9]															
Bright [10]	3.30¢	3.30¢		3.30¢	3.30¢		(Worcester=3.40¢, Duluth=3.35¢)					5.63¢[13]		3.71¢	3.68¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire Base														
Spring (high carbon)	4.25¢	4.25¢		4.25¢		(Worcester=4.35¢, Duluth=4.50¢)				(Trenton=4.50¢)		5.24¢[13]		4.66¢	4.345¢
PILING Steel sheet	3.00¢	3.00¢				3.00¢								3.41¢	3.36¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

Basing Point	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	22.99	24.67	17.01	17.47	20.69	25.29
Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt.	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville	23.00	22.50	17.50	17.50	21.00	25.50
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.50	26.00	20.50	21.00	24.50	30.00
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.50	26.00	20.50	21.00	24.50	30.00
Plates, P'gh, Middletown Canton	31.50	29.50	23.50	24.00	28.00	33.00
Shapes, structural, P'gh, Chi	27.50	26.00	20.50	21.00	24.50	30.00
Sheets, P'gh, Chi, Middletown, Canton, Balt.	39.00	37.00	29.00	31.50	35.50	39.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.50	23.50	18.50	19.00	26.00	38.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.50	30.50	24.00	24.50	35.00	56.50
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.	27.50	26.00	20.50	21.00	24.50	30.00
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Syracuse	27.05	25.97	20.02	20.56	21.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 to 6 in.)	72.09	72.09	.....	68.49	.....	.....

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, O.)*

An increase of 8.2 pct applies to base price and extras

	Base per lb
High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57½¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade	4.20¢
Armature	4.50¢
Electrical	5.00¢
Motor	5.70¢
Dynamo	6.45¢
Transformer 72	6.95¢
Transformer 65	7.65¢
Transformer 58	8.35¢
Transformer 52	9.15¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb	
No. 1 O.H., per 100 lb.	$2.50
Angle splice bars, 100 lb.	3.00
(F.o.b. basing points)	*per 100 lb*
Light rails (from billets)	$2.85
Light rails (from rail steel), f.o.b. Williamsport, Pa.	2.95

	Base per lb
Cut spikes	4.50¢
Screw spikes	6.40¢
Tie plate, steel	2.80¢
Tie plates, Pacific Coast	2.95¢
Track bolts	6.50¢
Track bolts, heat treated, to rail roads	6.75¢
Track bolts, jobbers discount	63-5

Basing points, light rails, Pittsburgh, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, add 25¢.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$6.75	$13.50

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Coatesville, Pa.	24.00*	22.00
Nickel-clad		
10 pct, f.o.b. Coatesville, Pa.	21.50	....
Inconel-clad		
10 pct, f.o.b. Coatesville	30.00	....
Monel-clad		
10 pct, f.o.b. Coatesville	29.00	....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

*Includes annealing and pickling.

MERCHANT WIRE PRODUCTS

To the dealer f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Base per keg	Delivered San Francisco
Standard, galvanized and coated nails	$3.75†	$4.83
Cut nails, carloads, Pittsburgh base	5.30	....

†10c additional at Cleveland, 30c at Worcester.

	Base per 100 lb	
Annealed fence wire	$3.95‡	$4.96
Annealed galv. fence wire	4.40‡	5.41

‡10c additional at Worcester.

To the dealer f.o.b. Pittsburgh, Chicago, Birmingham.

	Base column	
Woven wire fence*	84	107
Fence posts, carloads	82††	...
Single loop bale ties	86	110
Galvanized barbed wire**	94	114
Twisted barbless wire	94	...

*15½ gage and heavier. **On 80-rod spools in carload quantities. ††Pittsburgh; Duluth 90.

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

Steel	Alde-cor	Corten	Double Strength No. 1	Dyn-alloy	HI Steel	Mayari R	Otis-coloy	Yoloy	Y-50	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	American Rolling Mill	Great Lakes Steel
Plates	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10	....	4.10
Sheets										
Hot-rolled	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	....	3.75
Cold-rolled	4.75	4.75	4.75	....	4.75	4.75	4.75	4.75	5.225*	4.55
Galvanized	....	5.40	....	....	....	5.40	....	....	....	....
Strip										
Hot-rolled	3.85	3.85	3.85	....	3.85	3.85	3.85	3.85	....	3.75
Cold-rolled	....	....	4.75	....	....	4.75	4.75	4.75	5.00*	4.55†
Shapes	....	3.85	....	....	3.85	3.85	3.85	3.85	....	....
Beams	....	3.85	....	....	....	3.85	....	....	....	....
Bars										
Hot-rolled	4.00	4.00	4.00	....	....	4.00	4.00	4.00	....	4.00
Cold-rolled	....	....	....	....	....	....	....	4.60	....	....
Bar shapes	....	4.00	....	....	4.00	4.00	4.00	4.00	....	....

* 21 gage and lighter. † Pittsburgh, add 0.10¢ at Chicago and Gary.

PIPE AND TUBING

Base discounts. F.ob. Pittsburgh and Lorain, steel buttweld and seamless. Others f.o.b. Pittsburgh only

Base price, $200.00 per net ton

Standard, threaded & coupled

Steel, buttweld	Black	Galv.
⅛-in.	55½	41
¼-in.	58½	45
1 to 3-in.	60½	47½
Wrought Iron, buttweld		
⅛-in.	2	+20
¼-in.	11½	+10
1 and 1¼-in.	17	+ 2
1½-in.	22½	1½
2-in.	23	2
Steel, lapweld		
2-in.	53	39½
2½ and 3-in.	56	42½
3½ to 6-in.	58	44½
Steel, seamless		
2-in.	52	38½
2½ and 3-in.	55	41½
3½ to 6-in.	57	43½
Wrought Iron, lapweld		
2-in.	14½	+ 5½
2½ to 3½-in.	17	+ 1½
4-in.	21	4
4½ to 8-in.	19	2½

Extra Strong, plain ends

Steel, buttweld		
⅛-in.	54½	41½
¼-in.	58½	45½
1 to 3-in.	60	48
Wrought Iron, buttweld		
⅛-in.	6½	+14
¼-in.	12½	+ 8
1 to 2-in.	22	2
Steel, lapweld		
2-in.	52	39½
2½ and 3-in.	56	43½
3½ to 6-in.	59½	47
Steel, seamless		
2-in.	51	38½
2½ and 3-in.	55	42½
3½ to 6-in.	58½	46
Wrought Iron, lapweld		
2-in.	17½	+ 2
2½ to 4-in.	26	8½
4½ to 6-in.	22	4

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, cut length 4 to 24 ft, inclusive.

O.D. in.	Gage BWG	Seamless Hot-Rolled	Seamless Cold-Drawn	Electric Weld Hot-Rolled	Electric Weld Cold-Drawn
2	13	$15.29	$18.17	$15.00	$17.95
2½	12	20.57	24.43	20.11	24.07
3	12	22.87	27.18	22.26	26.68
3½	11	28.86	34.30	28.06	33.64
4	10	35.82	42.55	34.78	41.68

CAST IRON WATER PIPE

	Per net ton
6-in. to 24-in., del'd Chicago	$75.56
6-in. to 24-in. del'd New York	73.80
6-in. to 24-in., Birmingham	65.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles for all rail shipment; rail and water shipment less	89.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
½ in. & smaller x 6 in. & shorter	55
9/16 & ⅝ in. x 6 in. & shorter	52
¾ in. x 6 in. & shorter	49
1⅛ in. and larger, all lengths	48
Lag, all diam over 6 in. long	48
Lag, all diam x 6 in. & shorter	50
Plow bolts	57

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	48
9/16 to 1 in. inclusive	47
1⅛ to 1½ in. inclusive	45
1⅝ in. and larger	44

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts *Base discount less case lots*	U.S.S.	S.A.E.
7/16 in. and smaller	..	51
½ in. and smaller	48	..
½ in. through 1 in.	..	48
9/16 in. through 1 in.	47	..
1⅛ in. through 1½ in.	45	46
1⅝ in. and larger	44	..

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

	Consumer
Packages, nuts separate	60 and 10
In bulk	74

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets
(½ in. and larger)

	Base per 100 Lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$5.25
F.o.b. Lebanon, Pa.	5.40

Small Rivets
(7/16 in. and smaller)

	Percent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	55 and 5

Cap and Set Screws *(In packages)*	Percent Off List Consumer
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	56
Set screws, cup and oval points	61
Milled studs	33
Flat head cap screws, listed sizes	21
Fillister head cap, listed sizes	40

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Maximum price f.o.b. consumer's plant, $30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

Effective CaF_2 Content:	Base price per short ton
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer	$5.95
Old range, non-bessemer	5.80
Mesabi, bessemer	5.70
Mesabi, non-bessemer	5.55
High phosphorus	5.55

Prices quoted retroactive to Jan. 1, 1947.

METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh	23¢ to 27¢
Copper, electrolytic, 100 and 325 mesh	30¢ to 31½¢
Copper, reduced, 150 and 200 mesh	29¢ to 30½¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe	11¢ to 16¢
Swedish sponge iron, 100 mesh, c.i.f. N. Y., carlots, ocean bags	7.4¢ to 8¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots	5¢
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots	66¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe	25¢ to 31¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe	17¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe	90¢ to $1.75
Aluminum, 100, 200 mesh, carlots	23¢ to 26¢
Antimony, 100 mesh	36.05¢
Cadmium, 100 mesh	$2.00
Chromium, 100 mesh and finer	$1.025
Lead, 100, 200 & 300 mesh	18.50¢ to 23.50¢
Manganese, minus 325 mesh and coarser	33¢
Nickel, 150 mesh	51½¢
Silicon, 100 mesh	18.15¢
Solder powder, 100 mesh	8½¢ plus metal
Tin, 100 mesh	76.75¢
Tungsten metal powder, 98%-99%, any quantity, per lb.	$2.65
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb	$2.65
Under 100 lb	$2.90

COKE

	Net Ton
Furnace, beehive (f.o.b. even) Connellsville, Pa.	$8.75 to $9.25
Foundry, beehive (f.o.b. even) Connellsville, Pa.	10.00 to 10.50
Foundry, Byproduct	
Chicago, del'd	16.10
Chicago, f.o.b.	15.10
New England, del'd	16.04
Seaboard, Kearney, N. J., f.o.b.	15.35
Philadelphia, del'd	14.62
Buffalo, del'd	16.14
Ashland, Ohio, f.o.b.	13.35
Painesville, Ohio, f.o.b.	14.60
Erie, del'd	14.50
Cleveland, del'd	15.90
Cincinnati, del'd	15.39
St. Louis, del'd	15.85
Birmingham, del'd	12.35

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Carloads Per 1000
Sec. quality, Ohio	57.00
First quality, Pa., Md., Ky., Mo., Ill., Ohio	65.00
First quality, New Jersey	70.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	59.00
Sec. quality, New Jersey	62.00
Sec. quality, Ohio	57.00
Ground fire clay, net ton, bulk	9.50

Silica Brick

Pennsylvania and Birmingham	$65.00
Chicago District	74.00
Silica cement, net ton (Eastern)	11.50
Chicago	12.50

Chrome Brick	Per Net Ton
Standard chemically bonded, Balt., Plymouth Meeting, Chester	$54.00

Magnesite Brick

Standard, Balt. and Chester	$76.00
Chemically bonded, Baltimore	65.00

Grain Magnesite

Domestic, f.o.b. Balt. and Chester in sacks	$44.50
Domestic, f.o.b. Chewelah, Wash., in bulk	22.00
in sacks	26.00
Clinker (dead burned) dolomite, bulk, per net ton, f.o.b. York, Pa.	10.05
Midwest, add 10¢; Mo. Valley, add 20¢	

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

CITIES	SHEETS			STRIP		Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot-Rolled (10 gage)	Cold-Rolled (10 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled			Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	*Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
**Philadelphia	$4.24	$5.33	$5.29*	$4.43	....	$4.40	$4.22	$4.48	$5.38	$8.37	$8.37	$9.88	$9.88
New York	4.42	5.72[1]	5.47	4.62	5.25	4.72	4.37	4.62	5.42	8.42	8.42	9.92	9.92
Boston	....	6.218	....	....	5.156	....	....	....	5.468	....	....	....	....
Baltimore	4.09	....	5.14	....	....	4.39	4.34	4.45	5.35	....	....	....	....
Norfolk	4.35	....	....	....	....	4.50	4.50	4.75	5.50	....	....	....	....
Chicago	4.00	....	....	4.00	....	4.30	4.05	4.05	4.95	8.10	8.10	....	9.35
Milwaukee	4.199	5.349	5.249	4.199	....	4.499	4.249	4.249	5.149	8.399	8.399	9.649	9.649
Cleveland	....	....	....	4.88	....	4.30†	4.311	4.05	4.95	8.358	8.358	9.35	9.35
Buffalo	4.00	5.15	5.35	4.302	6.002	4.65	4.05	4.05	4.95	8.10	8.10	9.35	9.35
Detroit	4.14	5.29	5.42	4.34	....	4.59	4.42	4.19	5.00	....	....	....	....
Cincinnati	4.116	4.716	5.166	....	....	4.803	....	....	5.252	....	....	....	....
St. Louis	4.199	5.349	5.424	4.199	....	4.499	4.249	4.249	5.324	8.574	8.574	9.824	9.824
Pittsburgh	3.725	4.60[1]	....	4.00	....	3.95	3.80	4.05	4.95	8.10	8.10	9.35	9.35
St. Paul	3.384[7]	5.534[1]	5.434[2]	4.404[7]	....	4.684[7]	4.434[7]	4.434[7]	5.726[6]	....	10.084[6]	....	11.726[6]
Duluth	....	....	....	....	....	....	....	....	....	....	....	....	....
Omaha	4.868	6.618[1]	5.918	4.862	....	5.168	4.918	4.918	5.818	....	....	....	....
Indianapolis	....	....	....	....	....	....	....	....	....	....	....	....	....
Birmingham	3.85	....	5.20	4.10	....	4.30	4.05	4.05	5.83	....	....	....	....
Memphis	....	....	....	....	....	....	....	....	....	....	....	....	....
New Orleans	*4.46[11]	5.77[1]	....	....	....	4.83[11]	*4.68[11]	*4.78[11]	6.14	....	....	....	....
Los Angeles	....	....	....	....	....	....	....	....	....	....	....	....	....
San Francisco	4.90[8]	6.30[9]	6.45	5.20[8]	....	5.00[8]	4.90[8]	4.70[8]	7.00[10]	....	....	....	....
Seattle	5.00	7.80	6.05	....	....	5.25	4.95	4.90	6.75	....	....	....	....
Portland	5.00[3]	....	6.25	....	....	5.40	5.10	5.10	....	....	....	....	....
Salt Lake City	5.85	....	7.10	....	....	5.55	5.85	5.95	7.00	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 and over.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 10,000 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999; (8) 400 lb and over; (9) 450 to 1499; (10) 500 to 999; (11) 400 to 3999.

(a) Philadelphia: Galvanized sheet, 25 or more bundles.

* Add 46¢ for sizes not rolled in Birmingham.

** City of Philadelphia area only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area after deducting 34¢ per 100 lb (L.c.l. Sparrows Point to Philadelphia).

† Up to ¾ in. thick and 90 in. wide.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums.

BASING POINT PRICES						DELIVERED PRICES† (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	31.00	31.50	32.00	32.50	.....	Boston	Everett	$0.50 Arb.	29.50	30.00	30.50	31.00	.....
Birdsboro	34.00	34.50	35.00	35.50	39.00	Boston	Birdsboro-Steelton	4.82	....	....	....	....	40.82*
Birmingham	26.38	26.88	....	....	.....	Brooklyn	Bethlehem	3.00	34.00	34.50	35.00	35.50	.....
Buffalo	30.00	30.50	31.00	31.50	.....	Brooklyn	Birdsboro	3.50	....	....	....	....	43.50
Chicago	30.00	30.50	30.50	31.00	.....	Canton	Clev., Ygstn., Sharpsville	1.67	31.67	32.17	32.17	32.67	.....
Cleveland	30.00	30.50	30.50	31.00	.....	Cincinnati	Birmingham	4.87	31.25	31.75	....	....	.....
Detroit	30.00	30.50	30.50	31.00	.....	Jersey City	Bethlehem	1.84	32.84	33.34	33.84	34.34	.....
Duluth	30.50	31.00	31.00	31.50	.....	Jersey City	Birdsboro	2.33	....	....	.....	.....	41.33
Erie	30.00	30.50	31.00	31.50	.....	Los Angeles	Provo	5.94	35.94	36.44	.....	.....	.....
Everett	29.00	29.50	30.00	30.50	.....	Mansfield	Cleveland-Toledo	2.33	32.33	32.83	32.83	33.33	.....
Granite City	30.00	30.50	30.50	31.00	.....	Philadelphia	Swedeland	1.01	32.01	32.51	33.01	33.51	.....
Neville Island	30.00	30.50	30.50	31.00	.....	Philadelphia	Birdsboro	1.49	....	....	.....	.....	40.49
Provo	30.00	30.50	....	....	.....	San Francisco	Provo	5.94	35.94	36.44	.....	.....	.....
Sharpsville	30.00	30.50	30.50	31.00	.....	Seattle	Provo	5.94	35.94	36.44	.....	.....	.....
Steelton	31.00	31.50	32.00	32.50	38.00	St. Louis	Granite City	0.75 Arb.	30.75	31.25	31.25	31.75	.....
Swedeland	31.00	31.50	32.00	32.50	.....								
Toledo	30.00	30.50	30.50	31.00	.....								
Troy, N. Y.	....	....	....	....	36.00								
Youngstown[1]	30.00	30.50	30.50	31.00	.....								

* To $43.82.

(1) Struthers Iron & Steel Co., Struthers, Ohio, charges 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base price for low phosphorous $37.50 per gross ton, f.o.b. Lyles, Tenn. Delivered to Chicago, $42.99. High phosphorous charcoal pig iron is not being produced.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$38.00; f.o.b. Buffalo—$39.25. Add $1.00 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	148.50
F.o.b. Pittsburgh*	139.50

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Briquets—cents per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk	6.40	6.65	7.20
Ton lots	7.30	7.90	9.80
Less ton lots	7.70	8.30	10.20

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$39.00	$40.00
F.o.b. Pittsburgh		44.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30
L.c.l. lots	32

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	32
Ton lots	34
Less ton lots	36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.10% max. C, 0.06% P, 90% Mn	21.00	21.40	21.65
0.10% max. C	20.50	20.90	21.15
0.15% max. C	20.00	20.40	20.65
0.30% max. C	19.50	19.90	20.15
0.50% max. C	19.00	19.40	19.65
0.75% max. C, 7.00% max. Si	16.00	16.40	16.65

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed. 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.45
Ton lots	7.40
Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet	6.15
Ton lots	7.05
Less ton lots	7.45

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, $56.00 f.o.b. Keokuk, Iowa; $52.75 f.o.b. Jackson, Ohio; $54.00 f.o.b. Niagara Falls. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.

	Eastern	Central	Western
96% Si, 2% Fe	14.65	16.90	18.65
97% Si, 1% Fe	15.05	17.30	19.05

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si. 1 lb briquets.

	Eastern	Central	Western
Carload, bulk	3.85	4.10	4.30
Ton lots	4.75	5.35	5.65
Less ton lots	5.15	5.75	6.05

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
25% Si	11.65	...	...
50% Si	7.45	7.95	8.15
75% Si	9.25	9.55	10.30
80-90% Si	10.45	10.75	11.50
90-95% Si	12.05	12.35	13.05

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	23.00	23.40	24.00
0.10% C	22.50	22.90	23.50
0.15% C	22.00	22.40	23.00
0.20% C	21.50	21.90	22.50
0.50% C	21.00	21.40	22.00
1.00% C	20.50	20.90	21.50
2.00% C	19.50	19.90	20.50
65-69% Cr, 4-9% C	15.60	16.00	16.15
62-66% Cr, 4-6% C, 6-9% Si	16.60	17.00	17.15

Briquets — contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk	9.85	10.10	10.20
Ton lots	10.75	11.65	12.25
Less ton lots	11.15	12.05	12.65

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	16.70	17.10	17.25
Ton lots	17.90	19.20	20.00
Less ton lots	18.60	19.90	20.70

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

	Eastern	Central	Western
Carload	20.00	20.40	21.00
Ton lots	21.00	21.65	22.85
Less ton lots	22.00	22.65	23.85

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C	83.50	85.00	86.25
0.50% max. C	79.50	81.00	82.25
9.00% min. C	79.50	81.00	82.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.

30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	13.00	13.50	15.55
Ton lots	14.50	15.25	17.40
Less ton lots	15.50	16.25	18.40

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	15.50	16.00	18.05
Ton lots	16.50	17.35	19.10
Less ton lots	17.00	17.85	19.60

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone: 3.5¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.60	$2.35	$2.95
Less ton lots	1.95	2.70	3.75

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

	Eastern	Central	Western
Ton lots	13.50	14.60	16.55
Less ton lots	14.25	15.35	17.30

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	13.25	14.35	16.30
Less ton lots	14.00	15.10	17.05

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.

	Eastern	Central	Western
Ton lots	13.25	14.35	16.30
Less ton lots	14.00	15.10	17.05

Other Ferroalloys

Ferrotungsten, standard, lump or ¼X down, packed, f.o.b. plant Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed	$1.98
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.	
Openhearth	$2.70
Crucible	$2.80
High speed steel (Primos)	$2.90
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, per pound contained V_2O_5	$1.10
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb.	
Ton lots	$2.50
Less ton lots	$2.55
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo	95¢
Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo	80¢
Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Ferrotitanium, 40-45%, 0.10%C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10%C max., ton lots, per pound contained Ti	$1.35
Less ton lots	$1.40
High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$142.50
Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with $3 unitage freight equalled with Rockdale, Tenn., per gross ton	$58.50
Ferrophosphorus, Electrolytic, 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., $3 unitage freight equalized with Nashville, per gross ton	$75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	14.50¢
Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy	
Carload, bulk	4.85¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload	6.25¢
Ton lots	6.75¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Car lots	8.50¢
Ton lots	9.25¢
Less ton lots	9.75¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed. Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
Less ton lots	$1.30	$1.3075	$1.329

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

Ton lots	$1.89	$1.903	$1.925
Less ton lots	2.01	2.023	2.055

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

Less ton lots	$2.10	$2.1125	$2.1445

Silcaz, contract basis, f.o.b. plant freight allowed, per pound of alloy.	
Carload lots	35¢
Ton lots	37¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢

General Taylor Indicts Five Leading German Industrialists

Washington

• • • **Indicted along** with four other leading German industrialists by Brig. Gen. Telford Taylor recently, was Fried Flick, sole owner of an iron, steel and coal combine which by 1939 had become larger than the Krupp concern. The Civil Affairs Div. of the War Dept. in an interesting report on Flick said that the combine, which was the largest privately owned of its kind in Germany, produced more raw steel than any other concern except the state-owned Herman Goering works and Vereinigte Stahlwerke, in which the government also had a substantial interest. The operations of Flick in steel and other enterprises, real as they were, seem fantastic and could have been carried on only with the encouragement of a graft-ridden government. The story is fascinating and reveals the path that leads to war.

Flick, like his co-defendents, was a zealous Nazi and was indicted on four of five counts. These include participation in a slave labor program; economic spoilation in German occupied territories; aryanization of Jewish property in Germany and financial and other substantial support for SS and its principal leaders, including Himmler.

Despite the huge properties Flick owned, none of them carried his name. Instead he operated in anonymity during the Third Reich. This was not due to modesty. Rather this policy was on the sinister side. It was attributed to the notoriety attached to Flick's name in 1932 in connection with the sale by him to the German Government of the controlling interest in Vereinigte Stahlwerke at a gyp price. Reports were that high government officials got liberal antes out of Flick's gains.

The general opinion was that the slick Flick was in financial distress just prior to the sale but recouped on a grand scale by selling his shares in Vereinigte Stahlwerke to the German government at 90 when shares were quoted in the open market at 22. It was stated that Flick's influence on the German government is not widely known, but he had very close relations with such top-flight Nazi worthies as Goering, Himmler and Schacht. Goering died at the end of a rope after being convicted at Nuernberg for mass murders. The ruthless Himmler, a poison pill concealed in his mouth, crushed the pill between his teeth and dropped dead at the feet of British officers who were questioning him.

Fried Flick, Sole Owner of Large Iron, Steel, Coal Combine Is Among Accused

o o o

Schacht, the so-called financial genius for the Hitler regime, was acquitted at the Nuernberg trial but is due to appear before the Denazification Tribunal. Conviction before the Tribunal carries a maximum sentence of 10 years at hard labor and loss of citizenship rights. Being closely associated with these notorious figures evidently was enough to assure spoils for all concerned with the deal. Flick, it was said, had no superior as a powerful figure in the German iron, steel and coal industry.

Flick's influence extended to other lines of industry. Companies within the Flick concern included chemical plants, railroad car and locomotive manufacturing plants, armored trucks and tractors, and airplanes. He went into the airplane business in 1933 in cooperation with Goering's plan for secret air rearmament, and later played a leading part in the development of the Junkers concern under government auspices.

Flick also held numerous positions on supervisory boards of Vereinigte Stahlwerke, Dresdner Bayd, the Reichsbank and leading public utility and insurance companies.

Indicted with Flick were former business associates, Otto Steinbrinck, Konrad Kaletsch and Bernhard Weiss and Herman Terberger. Steinbrinck, a U-boat commander during the first war, who sank the American ship Sussex, became associated with Flick in 1924 and became Flick's right hand man. Steinbrinck left Flick at the end of 1939 after differences developed between them. Steinbrinck then became a leading official of Vereinigte Stahlwerke to represent extensive stock interests of the German Government.

Kaletsch and Weiss were both among Flick's closest associates and were leading officials in many of his companies. Kaletsch was the financial wizard in the Flick empire. Weiss acted as Flick's lieutenant in charge of all his steel finishing plants. Terberger was chief of Flick's Maxhuette plants located near Amberg. These are the largest Flick plants in American Zone.

Railway and Coal Mines Up for Sale as Scrap

New York

• • • **Trustees and** receivers of Pittsburg, Shawmut and Northern Rwy. Co., announced last week that a hearing on bids received by the trustees for sale of the railroad and coal mines of the company, either for scrap or for operations, has been set for March 3 at which time all additional bids will be considered. Bids ranging up to $1,200,000 have already been received. Railroad and mining companies will be sold together or separately.

The railroad properties to be sold include 172 miles of main track, from Wayland, N. Y., via Olean, N. Y., and St. Marys, Pa., to Hyde, Elk County, Pa.; 44 miles of side track; telegraph and telephone poles and wire; 462,000 cross ties; 27,500 gross tons rail; 3100 tons bridge steel; miscellaneous track material; 16 freight and yard locomotives; 106 hopper and gondola cars, 8 cabin cars and other miscellaneous equipment.

The coal mining properties to be sold include 15,791 acres of coal lands in Elk, Clearfield and Jefferson Counties, Pennsylvania, approximating 46 million tons, in addition to miscellaneous mining equipment.

Steel Man's Wife Finds Outlet for Daily Talks On Operation Problems

Kokomo, Ind.

• • • **Probably most steel** men and steel workers have never definitely kept a check on the amount of time they have talked shop while at home. Most wives of steel men could probably give a good account of the attention they have had to pay while the basic problems, trials and tribulations of the steel industry have been battered about the dining room.

Eos Petty Richardson of this city whose husband has been a steel man for 40 years and whose son is a metallurgist became so conditioned to household discussions of the industry that she found her way out of the dilemma by putting her ideas down in the form of blank verse.

° ° °

Junk—Before 1941

"Old iron, old iron,"
The rag man calls,
Picking up this unused thing
And that in his horse-drawn cart
On its rounds through the alleys,
A cast-off coal stove,
A worn rail,
An auto rim,
A baby carriage,
A broken toy;
The discards of life
Find their way
To the junkpile.
Desolation
Deterioration,
Degeneration,
"Old iron, old iron!"
The rag man calls.

Junk—1947

The telephone rings.
"Washington calling,"
The operator says.
An authoritative voice
Comes through:
"Is this you, Bill?
Surplus goods go on sale today—
Aeroplanes, trucks, jeeps,
Gas pipe-lines,
And such things too numerous
To mention, like
Factories, war plants, steel mills.
They are nothing but junk—
Nothing but junk, I tell you.
You better get in on this
If you know on which side your
Bread is buttered.
So long, Bill
You heard what I said—
Nothing but junk."

The Magnet

A magnet hovers
Over a pile of steel scrap,
Like an eagle searching for prey.
It pounces upon its hapless victim
Rising slowly with well-filled mouth.
It turns and soars along a track
To a predetermined destination.
A train of dinky-cars
Lying along the dark path,
frightened the master of the air.
Quickly it disgorges,
Drops the load in a car
And races back again
To familiar ground,
Seeking shelter in the craigs
Of junk-mountains.
More like a cormorant
That fishes day in and day out,
But swallows none of the catch
Because of the tight cord
Around its throat,
The patient magnet
Repeats the same performance.
Driven by the man-god
Who rides the crane
Doing the work
Of a multitude of men,
It asks nothing for itself.

The Dinky

Toy cars that run
On a toy track
A few hundred feet long;
A tiny engine puffs and blows,
Like all midgets
Demanding recognition,
Huffing and puffing
Down the track "the dinky" comes
With a heavy load,
Piled high with junk
From the scrap-pile mountain.
On its way it goes
To appease the hunger,
The seemingly insatiable hunger
Of the furnace-giant.

The Charging Car

Black, beetle-browed and foreboding
The furnaces stand in line,
Like giants too clumsy to move.
An automaton engine
Dances along the track
Feeding the glutonous mouths
Of the furnaces,
Each in its turn,
Until satisfied.
With the motion of a giant-arm
The "charging car"
Picks up a "pan"
From the "buggy"
Filled with scrap;
Lifts it in the air
And sesame—a door opens
Snapping off with one big bite
A whole pan-load
of iron scrap.
The door snaps shut,
The flame goes into action,
With every evidence
Of a giant stomachache.

The Furnaces

Inside the door
Licking flames
Project from all sides
Of the oven-shaped furnace,
Over the white-hot mass,
An inferno on earth
That eyes can see.
Men, bare to the waist,
Ply long-handled implements,
Taking tests,
Adding dolomite, maybe lime,
Straining muscles
Of toughened bodies.
One stands apart
Peering through a hole
Watching every change,
Cognizant of the state of things
Inside this hellish domain,
A captain of his crew.
He yells: "The heat is ready,
Here she comes!
Let her roll!"
A detail of men
Knock out the tapping hole
And the metal flows.
A red stream pours forth
In great gulps
From the tap-hole,
Filling a giant ladle
With molten steel,
A fire-works of slag
Pours over the edge.
Those tongues of flame
Have done their work.
No longer junk,
But steel, indispensable steel,
To make a new stove,
A railroad car,
An automobile,
A baby carriage,
And a toy for the children.
Steel, indispensable steel!

(*Continued from Page 64*)

Spongex: Sponge rubber furnished in sheets, strips, rods and tubes, for vibration elimination, cushioning, sealing and gasketing. Sponge Rubber Products Co., Shelton, Conn.

SPX: Fast, hard gold-plating solution. A. Robinson & Son, 131 Canal St., New York 2.

Spraywelder: Powder metalizing unit to combine both welding and metalizing procedure. Wall Colmonoy Corp., 19345 John R. Detroit 3.

Spring Action: Electric cord clamp attachment caps. Allied Electric Products, Inc., 76-82 Coit St., Irvington 11, N. J.

Stabilog: Instruments for control of temperature, pressure, flow and other variables in continuous process. Foxboro Co., Foxboro, Mass.

Stable Arc: Arc-welding electrodes for welding mild steel. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Stable-Arc: Welding electrodes. Lincoln Electric Co., 12818 Coit Rd., Cleveland.

Stablecote: Arcwelding electrode for steel; corresponds to AWS E-4520. Standard Steel & Wire Co., Bolivar, Pa.

Stabrite: Regular and wrinkle enamels in any color, air dry or baking, for applying to appliances, equipment and metal articles in general. Charles R. Long, Jr., Co., 1630 W. Hill St., Louisville, Ky.

Staflux: Flux for openhearth steel production. Standard Lime & Stone Co., 2000 First National Bank Bldg., Baltimore.

Sta-Gloss: 17 Cr stainless steel for knives, surgical instruments, valves, rods. Jessop Steel Co., Washington, Pa.

Sta-Gloss: Chromium stainless steels for valves, airplane parts, knives, instruments. Jessop Steel Co., Washington, Pa.

Staidarc B: Arcwelding electrode for steel; corresponds to AWS E-4510. Universal Power Corp., 735 Carnegie Ave., Cleveland 15.

Stain-Craft: Arcwelding electrode for stainless steel; type numbers correspond to AISI standard classifications. Allied Weld-Craft, Inc., 401 W. South St., Indianapolis 4.

Stainex: Series of straight-chrome stainless steels for general applications. Columbia Tool Steel Co., 326 N. Western & Sun Of. Lincoln & State, Chicago Heights, Ill.

Stainlend: Series of arcwelding electrodes for stainless steel. Arcos Corp., 1515 Locust St., Philadelphia 2.

Stainlend: Series of corrosion-resistant steel welding rods. Arcos Corp., 1515 Locust St., Philadelphia.

Stainless-Clad: Heat-resistant castings with a coating of ferrochromium. Bethlehem Steel Co., Bethlehem.

Stainless Ledloy: Stainless steel with lead addition to increase machinability. Joslyn Mfg. & Supply Co., Ft. Wayne, Ind.

Stainless W: Precipitation-hardening stainless steel of the 18-8 type. Carnegie-Illinois Steel Corp., Carnegie Bldg., Pittsburgh 30.

Stainweld: Arc-welding electrodes in six types for welding different analyses of stainless steels. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Stainweld: Arcwelding electrodes for stainless steel. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Stainweld: Corrodion-resistant 18-8 stainless with columbium hard-facing welding rods for stainless steel. Lincoln Electric Co., Cleveland.

Stainweld: Stainless steel welding rods. Lincoln Electric Co., 12818 Coit Rd., Cleveland.

Stakolite: Air-dry clear varnish. Stakolite Co., 25 Stanhope St., Boston.

Staminite: Acid-proof cement. Robinson Clay Products Co., Akron 9, Ohio.

Standard: Dead-burned dolomite and magnesite refractories. Standard Lime & Stone Co., 2000 First National Bank Bldg., Baltimore 3.

Standard Base Oil: Clear, neutral oil as a carrier for Magnaflux paste in the detection of surface and subsurface cracks in metal products. Standard Oil Co. of California, Standard Oil Bldg., San Francisco 20.

Standard: Electric resistance butt-welded steel tubing. Standard Tube Co., Detroit 3.

Standard Alloy: Complete series of heat resisting nickel-chrome-iron alloys for furnace parts, carburizing boxes, stainless castings and acid resisting equipment. Standard Alloy Co., Inc., 1677 Collamer Ave., Cleveland.

Standard: Motor-driven grinding, buffing and polishing machines and speed lathes. Standard Electrical Tool Co., 2505 River Rd., Cincinnati 4.

Standard Paste Compound: Paste-type, emulsifiable compound, especially used as coolant in grinding operations where fine finishes and prevention of "wheel loading" are required. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Standard Quenching Oil: Light-bodied oil especially recommended for quenching systems having adequate cooling and circulating facilities. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Standard Thinner No. 325: Water-white petroleum solvent for cleaning precision metal parts, motors, machinery, etc. Standard Oil Co. of California, Standard Oil Bldg., San Francisco 20.

Standlac: Spayed and air-dry lacquers in all colors. Standard Varnish Works, 2600 Richmond Terrace, Staten Island, N. Y.

Stanelec: Field grade electrical steel sheets. Empire Steel Corp., Mansfield, Ohio.

Stanfire: Heat resisting cast iron for fire-box grates. Standard Brake Shoe & Foundry Co., Pine Bluff, Ark.

Stanicool H. D.: Heavy-duty soluble oil possessing cooling ability of an emulsion but also ability to give better tool life and finer finishes. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Stanicut: Special-duty cutting oils containing the correct proportion of extreme-pressure and friction-reducing ingredients. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Stannite: Tinplate cleaner. Turco Products, Inc., Los Angeles 54.

Stannous (tin) Fluoborate: A high-speed acid stannous electroplating solution. General Chemical Co., 40 Rector St., New York 6.

Stanolind Forge Die Compounds: Medium and heavy grade, for the protection of dies and piercing tools in forging operations. Graphite, well dispersed and in stable suspension, is incorporated in these compounds. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Stanostamps: Paste compounds for stamping or heavy drawing operations of either low carbon or alloy steels. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Stannum Metal: Tin-base babbitt for machine bearings. Lumen Bearing Co., 199 Lathrop St., Buffalo 12.

Stanslog: Electric low tungsten-chromium steel for hand and pneumatic chisels, punches, caulking tools. Thos. Firth & John Brown, Ltd., Sheffield, England.

Stantox: Air-dry synthetic enamels in all colors. Standard Varnish Works, 2600 Richmond Terrace, Staten Island, N. Y.

Star: Brass for castings. A. Cohn, Ltd., London, England.

Star: Saw blades for cutting metals or nonmetallics. Clemson Bros. Inc., Middletown, N. Y.

Star: Silica refractory brick. Harbison-Walker Refractories Co., Pittsburgh.

Spiralwound: Metal-asbestos general purpose gasket composed of interlocked plies of preformed metal cushioned with asbestos strip, spirally wound. Goetze Gasket & Packing Co., Inc., New Brunswick, N. J.

Sprababbitt: Babbitt wire drawn and coiled specially for metal spraying bearing surfaces. Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.

Sprabrass: Brass wire for metal spraying. Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.

Sprabronze: Bronze wire in different alloys, drawn, annealed and coiled, specially for metal spraying. Metallizing Engineering Co., Inc., 38 30th St., Long Island City 1, N. Y.

Spray Granodine: A cold spray phosphate coating process for preparing sheet metal products for painting. American Chemical Paint Co., Ambler, Pa.

Sprairon: Iron wire for metal spraying. Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.

Spraysteel: Steel wire for metal spraying. Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.

Spremetall: Brass with 43 Zn, Mn-Pb for sheets, bars, forgings, to resist marine corrosion. Allgemeine Elektrizitats Gesellschaft, Berlin, Germany.

Spray Mix: Firebrick. Mexico Refractories Co., Mexico, Mo.

Spring Lay: Rope made of alternate strands of wire and cordage. Macwhyte Co., 2911 14th Ave., Kenosha, Wis.

Spun: Railway truck wheels. National Malleable & Steel Castings Co., Cleveland 6.

Spuncast Ho!fos Bronze: Phosphor bronze with 13 Sn, for heavy-duty bearings. John Holroyd & Co., Ltd., Rochdale, England.

Squarkeen: Shear knives for cold shearing of sheet, strip, tin plate, stainless and high silicon-manganese steel. American Shear Knife Co., Homestead, Pa.

Staralon: Carbide for silicon grinding wheels for cast iron. Detroit-Star Grinding Wheel Co., Detro't 9.

Starnickel: Pure nickel anodes, ingot and shot nickel, nickel-chrome-iron, nickel-copper alloy, cupro nickel, and nickel iron. American Nickel Alloy Mfg. Corp., 30 Vesey St., New York.

Starolox: Aluminous oxide abrasive grinding wheels for steel. Detroit-Star Grinding Wheel Co., Detroit 9.

Starrett: Precision tools, dial indicators, steel tapes, hack saw and band saw blades. L. S. Starrett Co., Athol, Mass.

Sta Safe: Complete line of aprons, clothing, etc., for workmen. Standard Safety Equipment Co., 232 W. Ontario St., Chicago 10.

Staset: Dead-burned magnesite refractory. Standard Lime & Stone Co., 2000 First National Bank Bldg., Baltimore 3.

Sta-Set: Finger cots made from fine leather permitting fine assembly work. American Optical Co., Southbridge, Mass.

Static-Cast: Carbon, low-alloy and stainless steels, both heat and corrosion-resisting grades. Empire Steel Castings, Inc., Reading, Pa.

Sta-Vac: Stainless steel polishing compositions. Bruce Products Corp., 5712 12th St., Detroit 8.

Staybrite: Austenitic 18-8 stainless steel for aircraft fittings, chemical constructions. Thos. Firth & John Brown, Ltd., Sheffield. England.

Square Sifter: Gyratory sifting machine with interchangeable sieve boxes. Allis-Chalmers Mfg. Co., Milwaukee 1.

SS-Unit: Close-coupled motor and centrifugal pump. Allis-Chalmers Mfg. Co., Milwaukee 1.

Sta-Kleen: Secondary vibration vibrating screen for fine moist or dry materials. Allis-Chalmers Mfg. Co., Milwaukee 1.

St. L.: Malleable and gray iron castings; pole and line specialties. St. Louis Malleable Casting Co., St. Louis 15.

Steam Aero: Aircraft steam cleaner compound. Turco Products, Inc., Los Angeles 54.

Steamaid: Light-duty chemical vapor cleaner. Turco Products, Inc., Los Angeles 54.

Steamfas: Heavy-duty chemical vapor cleaner. Turco Products, Inc., Los Angeles 54.

Steampac: High-pressure, high-temperature steam generator. Allis-Chalmers Mfg. Co., Milwaukee 1.

Steatite: Ceramic material composed principally of magnesium silicate; completely dense, non-absorbent; used as an insulating material for high-frequency equipment. General Ceramics & Steatite Corp., Keasbey, N. J.

Steb Metal: Silver copper combination for enameling and electrical contacts. Samuel Taylor, Ltd., Birmingham, England.

Steckel: Cold-rolling mills for precision rolling of ferrous and nonferrous sheet and strip. Cold Metal Products Co., Youngstown.

Stedmetal: Nickel cast iron for crushers, grinders, pulverisers. Stedman's Foundry & Machine Works, 507 Indiana Ave., Aurora, Ind.

Steelflex: Flexible-shaft coupling featuring a grid-groove design. Falk Corp., 3029 W. Canal St., Milwaukee 8.

Steel Grab: Double-jawed, positive-action grab for safely and quickly handling plates up to 1⅛ in. in thickness. Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh.

Steel Grip: Protector for thumb or finger in performing buffing, polishing, grinding, sanding and other operations. Industrial Gloves Co., 7154 Garfield Blvd., Danville, Ill.

Steelklad: Steel-clad refractories for melting furnaces; other refractory products. General Refractories Co., Philadelphia.

Steel Mixture: Firebrick. McLeod & Henry Co., Inc., 359 First St., Troy, N. Y.

Steelmol: Core and mold wash for steel castings. James Durrans & Sons, Ltd., Penistone near Sheffield, England.

Steelmold: Prepared blacking core and mold wash. James Durrans & Sons, Ltd., Penistone near Sheffield, England.

Steelok: Laminated metal-asbestos packing composed of two layers of asbestos with a reinforcing core of sheet steel. Goetze Gasket & Packing Co., Inc., New Brunswick, N. J.

Steel Powder: High-C-Ni Fe powder, for high-strength heat-treatable compacts to make machine parts of various types. Powder Metals & Alloys, Inc., 52 Vanderbilt Ave., New York.

Steelstrap: Steel strap and strap-applying equipment for shipping packs, cartons, bundles, bales, etc.; coils and cut lengths. Acme Steel Co., 2840 Archer Ave., Chicago 8.

Steelton L. P. Iron: Special low-phosphorous and sulphur pig iron for steel making in acid furnaces. Bethlehem Steel Co., Bethlehem.

Steelton Switch Stand: Positive railroad switch stand in low and intermediate heights. Bethlehem Steel Co., Bethlehem.

Steelweld Bulldozers: Metalworking machines for bending and forming heavy bars and plate, for forging operations and work requiring great power. Cleveland Crane & Engineering Co., 1115 E. 283rd St., Wickliffe, Ohio.

Steelweld Pivoted-Blade Shears: Metal-cutting power-driven shears of pivoted-blade operating principle for cutting, slitting or notching metal in any thickness up to 1¼ in. thick and any lengths up to 16 ft. Cleveland Crane & Engineering Co., 1115 E. 283rd St., Wickliffe, Ohio.

Steelweld Presses: Presses and brakes for bending, forming, corrugating, drawing and punching metal. Cleveland Crane & Engineering Co., 1115 E. 283rd St., Wickliffe, Ohio.

Steinle: Two-roll, hydraulically operated centerless thread generator. Steinle Machine Co., 62 Allyn St., Hartford 3.

Stellite-Weld: Solenoids. National Acme Co., 170 E. 131st St., Cleveland 8.

Stellram: Tungsten carbides and hard-metal cutting tools. Tungsten & Molybdenum Ltd., Nyon, Switzerland.

Stempel: Waste cans, fire extinguishers, etc. M. L. Snyder & Sons, Jasper & York Sts., Philadelphia 25.

Stempel: Complete line of rubber and oiled-cloth clothing, gloves, shoes, etc., M. L. Snyder & Son, Jasper & York Sts., Philadelphia 25.

Sterling: Full line of stainless steels. Firth Sterling Steel Co., First National Bank Bldg., Pittsburgh 22.

Sterling Stainless: Complete series of stainless steels for cutlery, ball bearings, valves, shafts, stainless articles. Firth-Sterling Steel Co., McKeesport, Pa.

Sterling TX: Stainless steel for turbine blades. Firth-Sterling Steel Co., McKeesport, Pa.

Stermet: Various grades of heat and corrosion-resistant alloy castings. Sterling Alloys, Inc., Woburn, Mass.

Stermet: General trade name for sand and diecastings in aluminum and magnesium. Sterling Metals Ltd., Coventry, England.

Stern Aluminum Powder: Powders made from Al borings and turnings; used for thermite, ferroalloys, powder-metal compacts, steel deoxidation. Metals Recovery Div., Loma Machine Mfg. Co., 580 Fifth Ave., New York 19.

Steve-Krane: Stevedoring crane. Silent Hoist & Crane Co., 841 63rd St., Brooklyn 20.

Stevens: Foundry facings, core washes, binders, parting compounds, etc. Frederic B. Stevens, Inc., Detroit 26.

Stewart: Two types of aluminum alloy with Cu and Si for diecast castings. **Stewart Die** Casting Corp., 4535 W. Fullerton Ave., Chicago 39.

Stewart White Brass: Zinc alloy with 3 Cu, 4 Al; for diecastings, hardware, lamp brackets. Stewart Die Casting Corp., 4535 Fullerton Ave., Chicago 39.

Stone Bronze: Corrosion-resistant copper alloy with 39 Zn and Fe-Al-Mn-Sn; for marine propellers, nuts, bolts. J. Stone & Co., Deptford, London, England.

Stones Gear Bronze: Lead-bearing phosphor bronze used for gears. Alloys & Products, Inc., Oak Point Ave. & Barry St., New York.

Stones Z-Metal: Nickel-bronze for firebox stays. J. Stone & Co., Deptford, London, England.

Stonewall: Powerful coppered babbitt used in steel mills for heavy duty bearings. United American Metals Corp., 200 Diamond St., Brooklyn 22.

Stonewall: Asbestos cement board in sheets, for electrical control bases, switch cells, etc. Ruberoid Co., 500 5th Ave., New York 18.

Stoneware: Ceramic clay material completely dense, with high resistance to acid and alkaline corrosive liquids and gases, having good thermal shock qualities. General Ceramics & Steatite Corp., Keasbey, N. J.

Stonfast: Provides strong and sturdy patches immediately for driveways, platforms, and floors. Stonhard Co., 401 N. Broad St., Philadelphia 8.

Stonhard: Acid and rustproof coatings for steel equipment. Stonhard Co., 401 Co., 401 N. Broad St., Philadelphia 8.

Stonpach: For repairs to worn concrete floors. Stonhard Co., 401 N. Broad St., Philadelphia 8.

Stontite: Stops leaks instantly in walls, foundations, dams, and reservoirs; bonds to old masonry or concrete. Stonhard Co., 401 N. Broad St., Philadelphia 8.

Stoodex: Hard-facing alloy. Stoody Co., Whittier, Calif.

Stoodite: Hardfacing material containing Fe, Mo, W, C, Si, Mn; for agricultural tools, cement-mill parts, brick and clay equipment, excavating machinery, etc. Stoody Co., W. Slauson Ave. at Sorensen, Whittier, Calif.

Stoody: Co, Cr, W hard-facing electrodes for abrasion and wear resistance. Stoody Co., Whittier, Calif.

Stormproof: Sheet steel roofing and sidings. Bethlehem Steel Co., Bethlehem.

StormSeal: Galvanized, formed steel roofing specially designed to eliminate side lap syphoning, end lap seepage and blowing of water through laps in high winds. Carnegie-Illinois Steel Corp., Carnegie Bldg., Pittsburgh 30.

Stover: Self-locking nut by ovalizing the female threaded part; relative motion between nut and bolt prevented regardless of whether or not the nut engages a seating surface. Stover Lock Nut & Machining Corp., Bushkill Drive, Easton, Pa.

Straightline: Sludge collectors, mechanical aerators, mechanically cleaned bar screens, grit collectors and washers, and mixers for flocculation tanks. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Strainco: Fabricated honey-comb wire mesh coolant and cutting-oil strainers and filters for all types of machine tools. Strainer Products Corp., 75 Willow St., Montclair, N. J.

Strainfree Elastuf Penn: Cold-finished steel, stress relieved to minimize warping and machining, of 0.45 C analysis with tensile properties equivalent to heat-treated alloy steels. Horace T. Potts Co., Erie Ave. and D St., Philadelphia 34.

Straightline: Wire netting. American Steel & Wire Co., Cleveland 13.

Straitoplane: Double planer that takes twist out of wood boards and planes opposite sides parallel. Oliver Machinery Co., Grand Rapids 2.

Strangl-Hold: Two-element adhesive consisting of a powder and a liquid which are mixed shortly before using; for joining metal to metal, glass, wood, or other materials, glass to glass, and wood to wood or glass. Colonial Alloy Co., P.R.R. & Trenton Ave., Philadelphia.

Stran-Steel: Strip-steel framing members carrying special groove to which collateral materials can be nailed. Great Lakes Steel Corp., Stran-Steel Div., Penobscot Bldg., Detroit 26.

Stratocord: Aircraft cable having a high coefficient of expansion approximately equal to that of aluminum alloy. John A. Roebling's Sons Co., Trenton 2, N. J.

Streamline: Splice to unite floor grating units together to form a continuous grating mat of any dimension. Irving Subway Grating Co., Inc., 27th St. and 51st Ave., Long Island City 1. N. Y.

Streamline: Tube, fittings, valves and other piping system accessories for plumbing, heating, refrigeration and other piping systems. Mueller Brass Co., Port Huron, Mirh.

Strenes Metal: Cast-to-shape alloy iron engineered to specification for wear, strength and heat resistance; can be flame or oil hardened for dies, etc. Advance Foundry Co., 107 Seminary Ave., Dayton 3.

Stressite: Powdered iron, brass or tin-bronze powder parts; for machine parts and heavy-duty bearings. Chrysler Corp., Amplex Div., Harper & Mt. Elliot Sts., Detroit 31.

Stress-Proof: Series of free-machining Mn-S steels for studs, bolts, shafts. La Salle Steel Co., 919 N. Michigan Ave., Chicago.

Stressproof: Severely cold-worked furnace-treated steel bars that eliminate necessity for heat treating or carburizing. La Salle Steel Co., P. O. Box 6800-A, Chicago 80.

Stripode: Addition agent for sulphuric acid anodic strip for stripping nickel deposits to eliminate or reduce pitting and etching. Chemical Corp., 54 Waltham Ave., Springfield, Mass.

Stripper L-780: Water-removable liquid paint remover. Turco Products, Inc., Los Angeles 54.

Strippits: Stripper units for stamping dies. Strippit Corp., 345 Payne Ave., North Tonawanda, N. Y.

Stroh: Wear and shock-resisting plain-carbon steel for steel castings, gears. Stroh Process Steel Co., 1428 High St., Pittsburgh.

Strongbarn: High-tensile galvanized, corrugated roofing or siding sheet, approximately 64 pct stronger than conventional galvanized roofing. Granite City Steel Co., Granite City, Ill.

Stronger-Than-Steel: Corrosion resistant 89 Cu, 10 Al, 1 Fe alloy for diecastings. Aurora Metal Co., Inc., Thurnauer & Lander Sts., Aurora, Ill.

Stub Screw: High-speed straight shank stub screw machine drills in all wire letter and jobber sizes. Chicago-Latrobe Twist Drill Works, 411 W. Ontario St., Chicago 10.

Studry Forty: Mn steel for machinery parts, gears, shafts. La Salle Steel Co., 919 N. Michigan Ave., Chicago.

Stupakoff: Stearite ceramic furnished in finished form or for molding, casting, machining, stamping, extruding; for electrical insulating parts. Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

Sturaco: Extreme-pressure oils and greases for industrial and automotive lubrication. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Styramic: Filled polystyrene plastics resin for tube sockets, coil forms, inductance beads, etc., in communication and electrical devices. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

Styramic: Styral resin used in place of wax for patterns in the precision casting of ferrous metals. Monsanto Chemical Co., 1702 S. Second St., St. Louis 4.

Styron: Brilliantly colored plastic for refrigerator parts, clock cases, lighting fixtures, etc. Dow Chemical Co., Midland, Mich.

Styron: Polystyrene plastic for molding all types of consumer products. Dow Chemical Co., Midland, Mich.

Submerso-Pak: Submersion-proof, flexible lining for shipping cases; cold pressure sealed; prevents moisture and corrosion. Cincinnati Industries, Inc., Cincinnati (Lockland).

Subrezist: Firebrick and mortar. Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis 1.

Subway: Open steel grating-flooring. Irving Subway Grating Co., Inc., 27th St. and 51st Ave., Long Island City 1, N. Y.

Sudal or Sudalon: Aluminum solders. Griesheimer Autogen Verkarfs G.m.b.H., Griesheim, Germany.

Sugar: Sulphate of iron. American Steel & Wire Co., Cleveland 13.

Sulcoat Processed: Arcwelding electrode for steel; corresponds to AWS E-4510. Champion Rivet Co., Harvard Ave. & E. 108th St., Cleveland 5.

Sulfio Concentrate: Cutting oil base having a stable suspension of finely divided sulphur. United Industrial Products, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.

Sumet Bronze: Series of leaded bronzes for bearings, under a variety of loads and

stresses. Henry A. Kries & Sons Co., 6 W. Lombard St., Baltimore.

Sumet Bronze: Copper with 30 Pb, Sn for light duty and high-speed bearings, packing rings. Sumet Corp., 1545 Fillmore Ave., Buffalo, N. Y.

Sumfoam: Additive agent for pickling baths to prevent fumes. Wm. M. Parkin Co., 1102 Highland Bldg., Pittsburgh 6.

Summerill: Seamless tubing. Summerill Tubing Co., Bridgeport, Pa.

Sun: Paint, lacquers and enamels for protecting and decorating metal products. Auto Sun Products Co., 527 Poplar St., Cincinnati 14.

Sunbeam: All types of furnaces for heating steels, heat treating, tinning, galvanizing, soft metal melting, etc. Stewart Industrial Furnace Div., Sunbeam Corp., 4433 Ogden Ave., Chicago 23.

Sunbrite: Metallic color lacquers in all shades. Sunbrite Mfg. Co., 3508 Market St., St. Louis 3.

Sunoco: Industrial lubricants and coolants. Sun Oil Co., Philadelphia 3.

Sunray Gold: Imitation gold for jewelry. Rd. Jones Ltd., Garrison Lane, Birmingham, England.

Supard Chrome: Corrosion resisting alloy for sulphuric acids, pump liners, plunger sleeves, bushings. Janney Cylinder Co., 8037 Frankford Ave., Philadelphia.

Supastuff: Steel for machinery parts, bolts. Winn, W. Martin, Ltd., S. Staffordshire, England.

Super: Inserted-blade adjustable reamers in standard machine, shell and hand styles, and in special-purpose styles engineered to specific jobs. McCrosky Tool Corp., Meadville, Pa.

Super Armorplate Lenses: Goggle lenses, scientifically toughened to resist impact of flying particles. American Optical Co., Southbridge, Mass.

Superbound: Stainless-clad flat-rolled steel Granite City Steel Co., Granite City, Ill.

Supercase: Low-carbon free-machining steel for case hardening, camshafts, gears, bolts, worms. Supersteels Inc., 7210 Stanton Ave., Cleveland.

Supercut: Free-machining steel for automatic screw-machine parts. Union Drawn Steel Co., Massillon, Ohio.

Super Cyclone: All-purpose furnace for batch hardening, normalizing, annealing, tempering, and nitriding, using principle of generating heat up to 1750°F in one chamber and transmitting it by means of a fan to furnace work chamber. Lindberg Engineering Co., 2450 W. Hubbard St., Chicago.

Super-de Lavaud: Cast iron pressure pipe centrifugally cast. United States Pipe & Foundry Co., Burlington, N. J.

Super-de Lavaud Metal: High C, high Si cast iron for centrifugally-cast pipes. U. S. Pipe & Foundry Co., Burlington, N. J.

Super-Duct: High strength Ni-Cr-Mo alloy steel for machinery parts. Industrial Steels, Inc., 250 Bent St., Cambridge, Mass.

Super Dynamo: Magnetic core material; superior permeability characteristics at low flux densities and good stamping properties. Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh.

Superex: Pipe covering and block insulation made from selected diatomaceous silica blended with other insulating materials and bended with asbestos fiber; for use between 600° and 1900° F. in furnaces, kilns, mains, flues and stacks. Johns-Manville, 22 E. 40th St., New York 16.

Superex: Furnace block insulation for temperatures up to 1900°F. Johns-Manville, 22 E. 40th St., New York.

Superfine: Series of Fe-Alloys for iron castings. Kelly Foundry & Machine Co., Elkins, W. Va.

Superfinishing: Method of surface finishing in which metal removal is accomplished by a bonded abrasive with light pressure and multiple motions. Chrysler Div., Chrysler Corp., Detroit.

Superflake: Foundry core washes, parting compounds, mold facings, etc. Superior Flake Graphite Co., 1533 First National Bank Bldg., Chicago.

Supergyraloy: Industrial wire cloth (screen cloth for vibrating screens). Robins Conveyors, Inc., 270 Passaic Ave., Passaic, N. J.

Super Hiloset: See Hiloset. Mexico Refractories Co., Mexico, Mo.

Superior: Complete series of stainless steels. Superior Steel Corp., Grant Bldg., Pittsburgh, Pa.

Superior: Gyratory and jaw crushers. Allis-Chalmers Mfg. Co., Milwaukee 1.

Superior: Steel and malleable iron castings. Superior Steel & Malleable Castings Co., Benton Harbor, Mich.

Superior: Twenty standard fluxes for the welding, soldering and brazing of all metals and their alloys and special fluxes for special needs or alloys. Superior Flux Co., 913 Public Square Bldg., Cleveland.

Super-Kool: Sulphurized cutting oils. D. A. Stuart Oil Co., 2733 S. Troy St., Chicago.

Superkool Base: Sulpho-chlorinated fatty-oil cutting-oil base used for a wide variety of metal-cutting operations when blended with light neutral lubricating oil. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Superkool Drawing Lubricants: Heavy-duty, extreme-pressure, fatty-oil-base drawing lubricant for difficult operations. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Superla: General-purpose oil coolant which emulsified readily in all waters; stable, non-gumming, non-irritating. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Superla Quenching Oil: Medium-bodied oil especially suited for systems in which the cooling facilities are limited and bath temperatures are higher. Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago 80.

Superlime: Composition for use in buffing and polishing. Hanson-Van Winkle-Munning Co., Matawan, N. J.

Superloy: 18-8 Cr-Ni austenitic stainless with 3.5 Mo, for corrosion-resistant parts in chemical industry. Washington Iron Works, 1512 6th Ave., S., Seattle, Wash.

Super-Loy: Wire, wire screens and cloth. Ludlow-Saylor Wire Co., Newstead Ave. & Wabash Railroad, St. Louis 10.

Superloy: Steel used for rolls for ferrous and nonferrous rolling mills. Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

Supermagaluma: High-magnesium aluminum alloy for high-strength applications. Aluminium Belge S. A., Liege, Belgium.

Supermagnet: Circular, rectangular and special design magnets for handling all classes of magnetic material. Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1.

Supermal: High-carbon, malleable iron for chains, buckets, conveyor equipment. Jeffrey Mfg. Co., 958 N. 4th St., Columbus 16, Ohio.

Supermal: Heat-treated malleable iron; high strength, abrasion resistant; used for chain links, elevator buckets, etc. Jeffrey Mfg. Co., Columbus 16, Ohio.

Supermetal: Coated low-carbon steel for oven linings. Superior Sheet Steel Co., Canton, Ohio.

Super Mono-Fibrik: See Mono-Fibrik. Mexico Refractories Co., Mexico, Mo.

Super-Nickel: Cupro-nickel alloy. American Brass Co., Waterbury 88, Conn.

Super Nilvar: Fe-alloy with 31 Ni, 5 Co for instruments. Driver-Harris Co., Harrison, N. J.

Super Oilite: 75 Fe-25 Cu sintered alloy for heavy duty bearings, parts. Amplex Div., Chrysler Corp., 6501 Harper St., Detroit.

Super-Quench: Quenching oil with unusual cooling speed. Gulf Oil Corp., Gulf Bldg., Pittsburgh 30.

Super-Safety: Alloy steel for stamps. M. E. Cunningham Co., 115 E. Carson St., Pittsburgh.

Super-Salem: Elevator Buckets. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Super-Service: Compression couplings. Dresser Mfg. Div., Bradford, Pa.

Super-7: Belts. Allis-Chalmers Manufacturing Co., Milwaukee.

Supersonic Reflectoscope: Instrument for detection of internal flaws in metals and other materials, employing ultrasonic principles. Sperry Products, Inc., 15th & Willow Ave., Hoboken, N. J.

Supersonic Reflectoscope: See Reflectoscope.

Superston: Aluminum bronze for general applications. J. Stone & Co., Deptford, London, England.

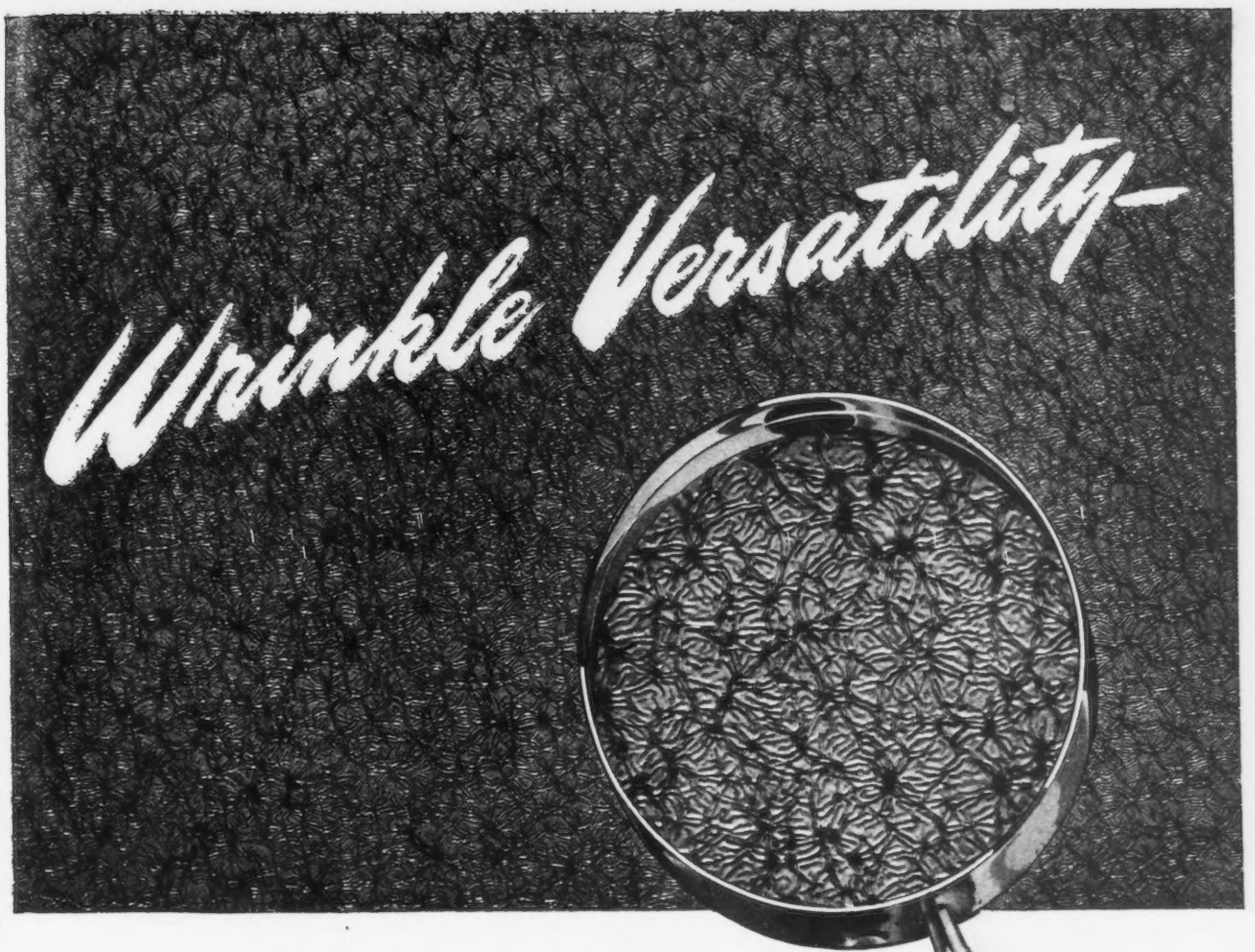
Superstrip: Hot and cold-rolled high-quality strip steels for stamping, forming and deep drawing. Acme Steel Co., 2840 Archer Ave., Chicago 8.

Superstrong: Shipping containers. Rathborne, Hair & Ridgway Co., 1440 W. 21st Place, Chicago 8.

Supertem: Alloy steel with Mn-Cr-W for bolts, studs, forgings. Bethlehem Steel Co., Bethlehem, Pa.

Super Thermo Stucco: Air-setting, self-bonding refractory stucco. Chicago Fire Brick Co., 1467 Elston Ave., Chicago 22.

(*Continued on Page* 138)



means combinations of colors, too!

Wrinkle coatings are available in any colors you want—in primary colors, tints, pastels and *combination* effects for unusual eye appeal. Wrinkle versatility doesn't stop there. Users find, for example, that Wrinkle is used on *flexible* materials with the same success as on metal or similar surfaces.

Wrinkle is economical to use, requiring only one top coat. It covers imperfections in castings and weldments without extensive clean-up necessary with smooth finishes. Wrinkle protects while it enhances the beauty of coated surfaces. It doesn't chip or peel and is extremely durable even under adverse conditions.

Approximately 200 leading paint and varnish plants which manufacture Wrinkle under our license can supply you with Wrinkle coatings in a variety of textures, patterns, and colors to suit your needs.

Write for "New Wrinkles in Finishing," a bi-monthly report on developments in the Wrinkle field.

New Wrinkle, Inc.,

Wrinkle
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Offices and Research Laboratories
1769 Springfield St., Dayton 3, Ohio

for CASTINGS • STAMPINGS • PRESSINGS • FORGINGS • MALLEABLES • DIE CASTINGS

Significant users include manufacturers of: Electrical motors, instruments, tools, supplies, cabinets; Precision instruments; Shelvings, cabinets, tool boxes, cases; Caskets; Machine tools; Scientific apparatus; Photographic equipment and supplies; Office machines, equipment and supplies; Household machines; Air Conditioning equipment.

DANLY

Horning Presses

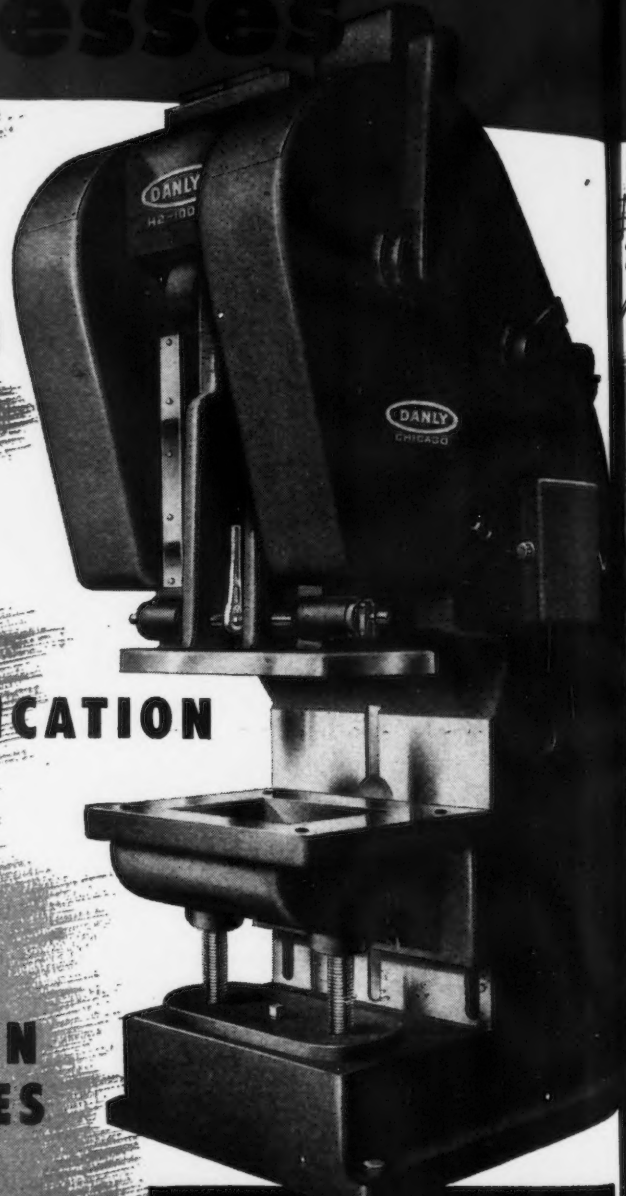
1 RUGGED CONSTRUCTION

2 MECHANICAL ACCURACY

3 PRESSURE OIL SPRAY LUBRICATION

4 AIR FRICTION CLUTCH

5 MODERN DESIGN FEATURES



The 100-ton Horning Press—similar in construction to the inclinable model—is shown with removable knee or table. This press has an 8" stroke—operates at 40 strokes per minute. Adjustment of slide—4" by hand. Shut height with knee adjustment down, slide adjustment up—20"; adjustment of knee—10". Shut height with knee removed—39".

1 **STEEL UNIT FRAMES**—These presses have unit frames—rugged one-piece all steel construction, making for exceptional rigidity and resistance to deflection. Gearing and driving members completely enclosed within the frame eliminate outboard brackets and projections—prevent dirt accumulation in working parts—improve safety conditions.

DANLY MACHINE SPECIALTIES, INC

Back Inclinable and

2 **2-POINT SUSPENSION—ECCENTRIC GEAR DRIVE—EXTRA-LONG GIBS**—Unusual mechanical features in presses of this kind and size, may insure even pressure along the full length of the stroke; minimize slide-play; make for accurate alignment of large or progressive dies.

3 **CIRCULATED OIL SPRAY SYSTEM**—All gears and internal moving parts run in a spray of filtered oil.

4 **AIR-FRICTION CLUTCH and COMBINATION DISC BRAKE**—Solenoid control provides smooth and fast engagement and disengagement of the driving machinery without delay for cam rotation.

5 **ADDITIONAL FEATURES**—Air-Counter Balance Cylinder for slide return . . . Electric Push-Button Control Panel—Foot button installed if required . . . Main Gear Shaft extends beyond frame providing a power take-off for driving feeds.

The 100-ton Inclinable Press, shown, has a 2-point suspension with eccentric gear drive. This press has an 8" stroke—operates at 40 strokes per minute. Bed area is 31" x 40"—designed to be equipped with air cushions if desired. Pivot point is so arranged that the center of the bed is not elevated when press is inclined. Distance floor to bed 33".

THE PRESS for MODERN PRODUCTION

2100 So. 52nd AVENUE • CHICAGO 50, ILLINOIS

(*Continued from page* 134)

Supertough: Alloy steels with Mn, Mn-Mo or Mn-Ni-Mo; for crankshafts, connecting rods, spindles and general work. English Steel Corp., Ltd., Sheffield, England.

Supertrol: Engine overhaul cleaning compound. Turco Products, Inc., Los Angeles 54.

Supervane: Centrifugal fans. Westinghouse Electric Corp., East Pittsburgh, Pa.

Super-Y: Alloy malleable iron castings having high yield strength, good castability, good shock resistance and machinability; used wherever a casting material midway between malleable iron and steel is sought. Chicago Malleable Castings Co., 1227 W. 120th St., Chicago.

Super-X: Alloy cast steel rolls. United Engineering & Foundry Co., First National Bank Bldg., Pittsburgh 22.

Super Zorite: Fe alloy with 37-40 Ni, 17-21 Cr for beams, rails, trays, furnace parts. Michiana Products Corp., Michigan City, Ind.

Surbrite: Organic pickling inhibitor and brightener for continuous pickling of steel; pickling primer to plating, painting, etc. Hanson-Van Winkle-Munning Co., Matawan, N. J.

Surbrite: Pickling brighteners. Hanson-Van Winkle-Munning Co., Matawan, N. J.

Sure-Return: Condensation pump and receiver. Chicago Pump Co., 2300 Wolfram St., Chicago 18.

Sureweld: Series of arcwelding electrodes for stainless steel. Hollup Corp., 4700 W. 19th St., Chicago 50.

Sureweld: Full line of arcwelding electrodes for steel. Hollup Corp., 4700 W. 19th St., Chicago 50.

Surface Analyzer: Instrument for measuring surface finish from less than 1 to 5000 microinches. Brush Development Co., 3403 Perkins Ave., Cleveland 14.

Surface Combustion: Industrial heating and heat treating furnaces; gas-fired industrial burners; atmosphere generators, and dew point recorders. Surface Combustion Corp., 2375 Dorr St., Toledo 1.

Surfaceweld: Powder to be used with the carbon arc to build up surfaces to resist severe abrasion. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Surfacing: Welding rod for high-speed surfacing. Metal & Thermit Corp., 120 Broadway, New York.

Surf-Chek: System for quality control of machined surfaces accomplished by a distinctive drawing designation referencing a series of replica surfaces. Surface Checking Gage Co., Hollywood 28, Calif.

Suttonite: High-speed steel welding rod used for reclaiming high speed steel cutting tools. Welding Equipment & Supply Co., 223 Leib St., Detroit 7.

Suttonite (Suttonizing): Hard metal tool reclaiming rod and process, for reclaiming worn or broken milling cutters, broaches, drills, lathe tools, shapers, etc. Welding Equipment & Supply Co., 229 Leib St., Detroit 7.

Su Veneer: Flat steel, clad (one or both sides) with another metal; for corrosion-resistant stampings and drawn parts. Superior Steel Corp., Carnegie, Pa.

Svea Metal: Pure iron for radio tubes, X-ray equipment. G. W. Prentiss & Co., 145 Front St., Holyoke, Mass.

SVW: Aluminum lacquers and paints. Standard Varnish Works, 2600 Richmond Terrace, Staten Island, N. Y.

SW: All-welded lifting magnet for handling scrap and pig iron. Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland 4.

Swaged Loop Attachment: Economical method for fastening loops, either with or without thimbles, in the ends of wire rope and aircraft cable. John A. Roebling's Sons Co., Trenton 2, N. J.

Sweaton: Corrosion and wear resisting welding electrode. Allis-Chalmers Mfg. Co., Milwaukee 1.

Sweetaloy: Heat and corrosion - resistant chrome-nickel stainless and rust resistant 5 Cr steel alloys for general applications. Cooper Alloy Foundry Co., Elizabeth, N. J.

Sweet Home Brand: Phenolic resin-bonded, thermo-setting fir plywood. Am-mex Sales Co., Inc., Prudential Bldg., Buffalo.

Sweet's: Steel rails, angles, reinforcing bars, fence posts, etc. Sweet's Steel Corp., Williamsport 62, Pa.

Swiftweld: Arcwelding electrodes for welding mild steel. Lincoln Electric Co., 12818 Coit Rd., Cleveland 1.

Swiftweld: Arc-welding electrode for steel; corresponds to AWS E-4520. Lincoln Electric Co., 12818 Coit Road, Cleveland 1.

Swindell: Industrial furnaces, electric-arc melting furnaces. Swindell-Dressler Corp., Pittsburgh.

Sykes: Gear-generating machines and continuous tooth herringbone gears. Farrel-Birmingham Co., Inc., Ansonia, Conn.

Sylvaloy: Magnetic 97 Ni-3 Si alloy for vacuum tube filaments. Wilbur B. Driver Co., Newark, N. J.

Symbol Hammer: Combination slag-removing chipping bit for cleaning welds and marking stamp for welder or inspector identification. Atlas Welding Accessories Co., 14824 Wyoming Ave., Detroit 21.

Synchro-Operator: Full automatic synchronizing device. Allis-Chalmers Mfg. Co., Milwaukee 1.

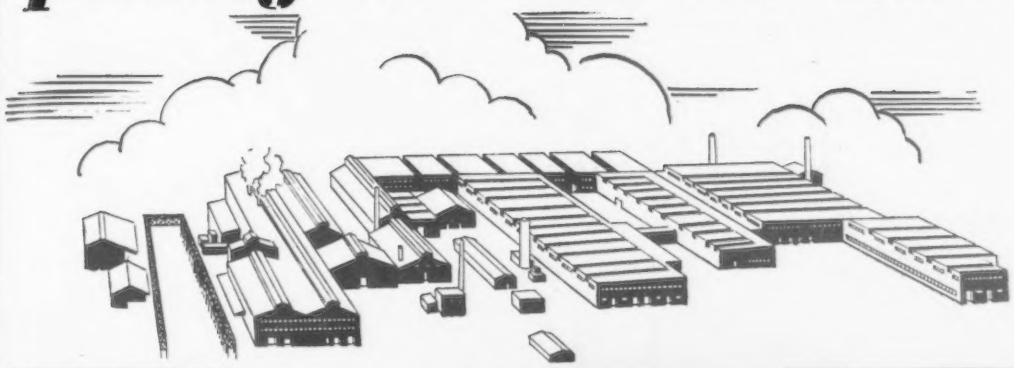
Syndolag: Dead-burned dolomite refractory for bottom and slag-line maintenance in basic openhearth and basic electric steel furnaces. Basic Refractories, Inc., 845 Hanna Bldg., Cleveland 15.

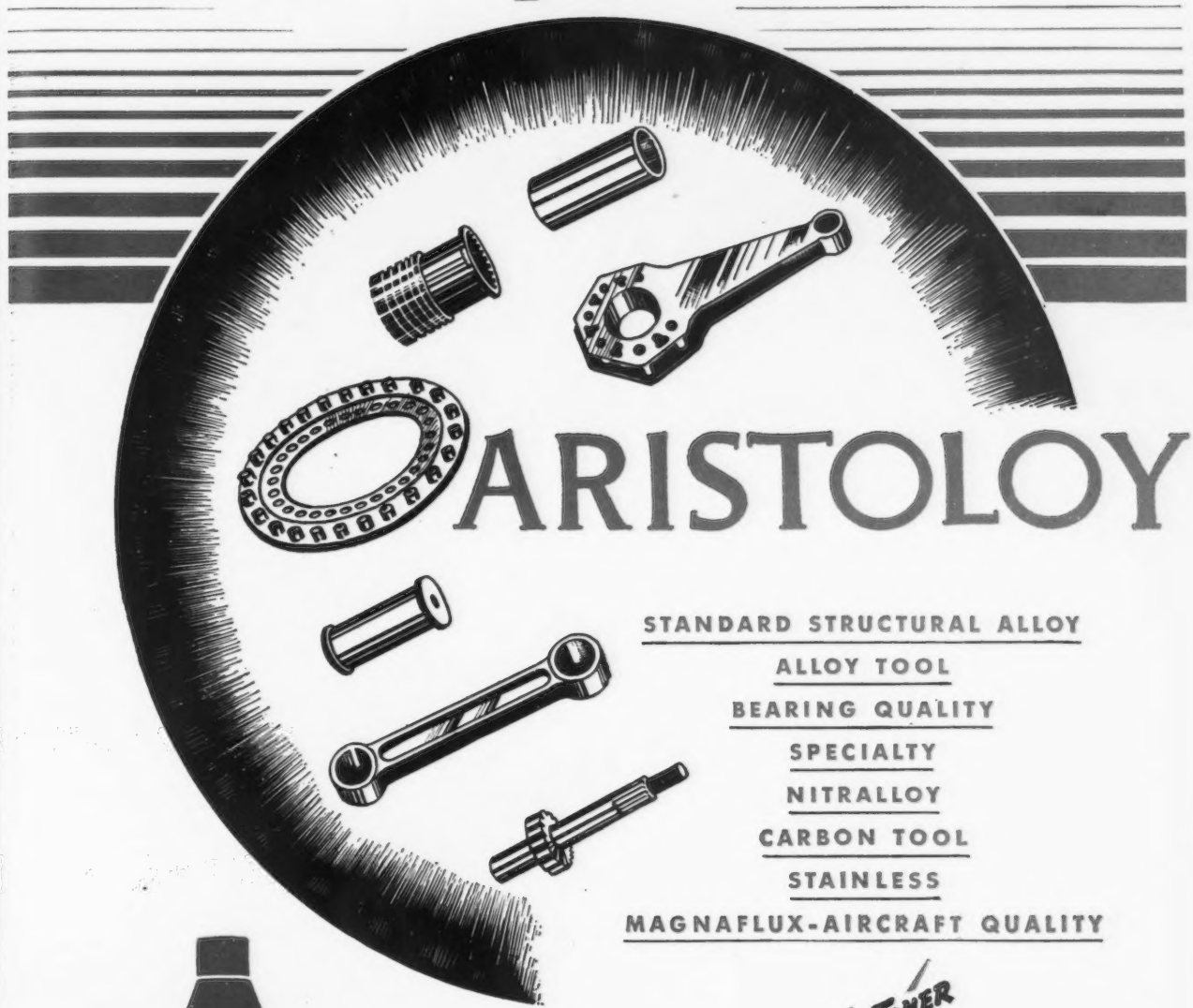
Syntex: Air-dry and baking synthetic enamels in all colors—brush, spray, flow, dip—for refrigerators, stoves, etc. Jones-Dabney Co. Div. of Devoe & Raynolds Co., Inc., 1483 S. 11th St., Louisville 8.

Syrocowood: Thermosetting and thermoplastic molded wood. Syracuse Ornamental Co., Inc., Syracuse, N. Y.

(*Continued on page* 142)

quality electric furnace steels





ARISTOLOY

STANDARD STRUCTURAL ALLOY

ALLOY TOOL

BEARING QUALITY

SPECIALTY

NITRALLOY

CARBON TOOL

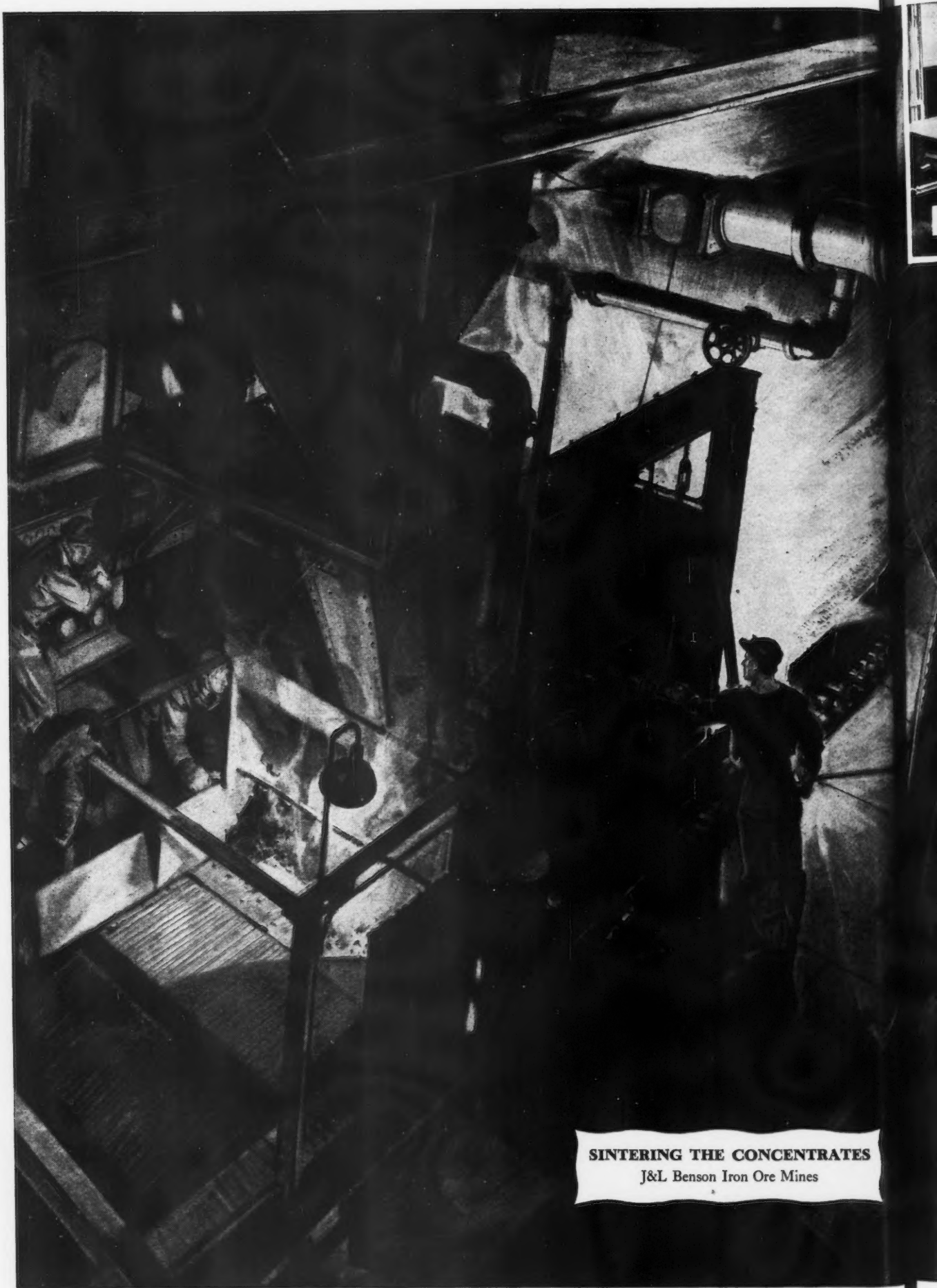
STAINLESS

MAGNAFLUX-AIRCRAFT QUALITY

NONE FINER

COPPERWELD STEEL COMPANY

WARREN, OHIO



SINTERING THE CONCENTRATES
J&L Benson Iron Ore Mines

DRAWN FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MAC PHERSON

10,000 TRADE NAMES

(*Continued from page* 138)

—T—

T.P.A.: Heat resisting, complex Fe alloy for valves, valve seats. Thompson Products, Inc., 2196 Clarkwood St., Cleveland.

Tablast: Blast cleaners. American Foundry Equipment Co., Inc., 451 S. Byrkit St., Mishawaka, Ind.

Tabletting: Machines for compacting powdered metals and other materials. F. J. Stokes Machine Co., Tabor Rd., Philadelphia 20.

Tabor: Foundry molding machines and equipment. Tabor Mfg. Co., Philadelphia 35.

Tabor-Brasive: Cutoff machines. Tabor Mfg. Co., Philadelphia 35.

Tag: Electronic controllers to regulate furnace temperatures. C. J. Tagliabue Div., 595 Park Ave., Brooklyn 5.

Tail Shaft Bronze: Bronze for bearings, pump liners, centrifugal castings. Janney Cylinder Co., 8037 Frankford Ave., Philadelphia.

Talisman: Antifriction alloy for bearings. Magnolia Metal Co., Elizabeth, N. J.

TAM: 17-Ti alloy with high Si, C, Al used as deoxidizer in steel making. Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

Tamastone: Foundry pattern compounds. Tamms Silica Co., 226 N. LaSalle St., Chicago.

Tangemetric: Tangent chasers for use in die heads. Geometric Tool Co., New Haven 15, Conn.

Ta-Ni: Nickel and tantalum combinations for electronic and chemical applications. Fansteel Metallurgical Corp., 2200 Sheridan St., North Chicago, Ill.

Tannewitz: Metal sawing machinery and pressed steel specialties. Tannewitz Works, 301 Front Ave., N. W., Grand Rapids.

Tanseal: Vegetable-fibre sheet packing suited for light bolted joints to resist air, water, oil and grease at temperatures up to 250°F. Goetze Gasket & Packing Co., Inc., New Brunswick, N. J.

Tantalloy: Tungsten, chromium cobalt-base cast alloy for heat, wear and corrosion resistant applications. Available as tools, and other parts. Vascoloy-Ramet Corp., North Chicago, Ill.

Tantalum Bronze: Copper alloy with Al-Mo-0.2 Ti, for steam fittings and valves. Ruselite Corp., 1027 N. 4th St., Milwaukee.

Tantiron: High-silicon, corrosion and abrasion resisting iron for chemical apparatus and machine parts. Bethlehem Foundry & Machine Co., Bethlehem, Pa.

Tantung: Tungsten, chromium cobalt-base cast alloy for heat, wear and corrosion resistant applications. Available as tools, and other parts. Vascoloy-Ramet Corp., North Chicago, Ill.

Taper-Lock: Tapered bushed sheave for holding wheels to shaft. Dodge Mfg. Corp., Mishawaka, Ind.

Tapgun: Electrical hand tool for threading holes in metal, to receive machine screws and threaded fasteners. Black & Decker Mfg. Co., Towson 4, Md.

Thanks for the kind words... (EVEN IF WE DON'T DESERVE THEM)

Nobody knows as well as we here at "National" how far we have fallen short of giving our normal standard of service to our customers during these difficult times.

This generous letter, written to us by an important customer recently, can only be taken gratefully as recognition on his part that we have tried. And we will certainly "do our damnedest" to live up to the spirit of this letter, in all our customer relationships.

"I want to thank you for the way you and your organization are handling our business. I know we have been in some tight spots, but you have been able to work with us and help us over these situations. This is certainly the kind of sources we want to do business with.

"We have a long way to go before we get back to normal, and we are going to have problems facing both of us, but I know your organization will do everything they can when we call upon them."

"NATIONAL SCREW" SPECIALTIES INCLUDE:

- Clutch Head Screws
- Davis Blind Fasteners
- Drake Lock Nuts
- Dynamic Lock Nuts
- Hi-Shear Rivet Pins and Collars
- Huglock Nuts
- Laminar Flow Screws
- Lok-Thred Studs
- Marsden Lock Nuts
- Phillips Recessed Screws
- Place Bolts
- Rosán Locking System
- Scrivets
- Sems

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

10,000 TRADE NAMES

Tate-Jones: Soaking pits, slab and billet-heating furnaces. Tate-Jones & Co., Inc., Plaza Bldg., Pittsburgh 10.

Taurex Bronze: See Olympic Bronze.

Taurus Bronze: Series of bronzes and phosphor bronzes for high quality gears, bearings, castings. David Brown & Sons, Ltd., Huddersfield, England.

Ta W: Tantalum and tungsten combination for electronic tubes, electrodes, chemical applications. Fansteel Metallurgical Corp., Inc., 2200 Sheridan St., North Chicago, Ill.

Taylor: Refractory insulating firebrick with service temperatures up to 2600°F; for industrial furnaces of all types. Chas. Taylor Sons Co., 717 Burn St., Cincinnati 14.

Taylor-Newbold: Inserted-blade milling cutters and cold saws. Tabor Mfg. Co., Philadelphia 35.

Taylor Zircon: Refractories and refractory cements for metal-melting furnaces. Chas. Taylor Sons Co., Cincinnati.

TC: Contact alloys having high hardness and wear resistance; for electrodes for upsetting projection (resistance) welding. P. R. Mallory & Co., Inc., Mallory Bldg., Indianapolis.

Tear-Proof: Complete line of rubber and oiled-cloth clothing, gloves, shoes, etc. M. L. Snyder & Son, Jasper & York Sts., Philadelphia 25.

Tec-Cut Oils: Cutting oils for all types of metals. United Industrial Products, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.

Tec-Draw: Drawing compounds for all types of metals and alloys. United Industrial Products, Inc., 1143 E. Jersey St., Elizabeth 4, N. J.

Tech-Aloy: 67 Ag with Sn, Cu, Zn for tooth models. J. M. Ney Co., 9 Elm St., Hartford.

Technalloy (Technikrome): Alloy cast steel, hardness 30 to 55 scleroscope, for rolls for metal rolling. Mackintosh-Hemphill Co., 901 Bingham St., Pittsburgh.

Teco: Gasoline and electrically driven air compressors and marine bronze fittings. Thompson Engineering Co., Grand Rapids 2, Mich.

Tectyl: Spray-on or flushing compound to protect metal parts against rust. Freedom-Valvoline Oil Co., Freedom, Pa.

Teenax NB: W-Cr steel for general use. Poldi Steel Works, Prague, Czechoslovakia.

Tego: Complex lead alloy for anti-friction bearings. Th. Goldschmidt, A. G., Essen, Germany.

Telastic Moly: Normalized Mn-Mo steel for heavy-duty cast gears. Falk Corp., 3001 W. Canal St., Milwaukee.

Telatherm: High-frequency apparatus. Westinghouse Electric Corp., East Pittsburgh.

Telconstan: Copper-nickel alloy for electrical resistances, shunts, motor starters. Telegraph Construction & Maintenance Co., Ltd., London, England.

Telectal: Aluminum alloy with silicon and lithium, for electrical conductors, light-alloy parts. Metallgesellschaft, A. G., Frankfurt a/M, Germany.

Teledium: Lead with 0.02 tellurium for chemical plant equipment, cable sheathing, batteries. Goodlass Wall & Lead Industries, Ltd., London, England.

Tell-Board: Practical and durable bulletin cases. Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh.

Tellurium Copper: Alloy having better combination of conductivity, forgeability and machinability than other coppers. Chase Brass & Copper Co., Inc., Waterbury 91, Conn.

Telnic: Age-hardenable high-copper alloy of high strength, high hardness, excellent machinability, excellent hot forgeability, fairly good conductivity, good resistance to corrosion. Chase Brass & Copper Co., Inc., Waterbury 91, Conn.

Temco: Electric heat treating and laboratory furnaces. Thermo Electric Mfg. Co., 480 W. Locust St., Dubuque, Ia.

Temcross: Fe alloy for general use. Ingersoll Steel & Disc Co., 310 S. Michigan Ave., Chicago.

Tempaloy: Corrosion-resistant copper alloy with 4 Ni, 1 Si for general service applications. American Brass Co., Waterbury, Conn.

Temperature Compensator: Fe, with 30 Ni, compensating alloy for electrical equipment. Carpenter Steel Co., Reading, Pa.

Temperim: Special analysis iron, cast against metal chills for superior hardness (400 bhn), wear resistance, and dimensional accuracy. Chain Belt Co., 1600 W. Bruce St., Milwaukee 4.

Temperite: Pb, Sn, Cd temperature-indicating alloys. Cornish Wire Co., 15 Park Row, New York.

Temperometer: Metal thermometer employing bimetallic coil principle for use in hot lead, waxes, etc.; ranges 0 to 1000°F. W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44.

Tempil: Flat disks with predetermined melting points; placed on surface, melts sharply when surface reaches particular temperature; available from 125° to 1800°F in handy intervals. Tempil Corp., 132 W. 22nd St., New York 11.

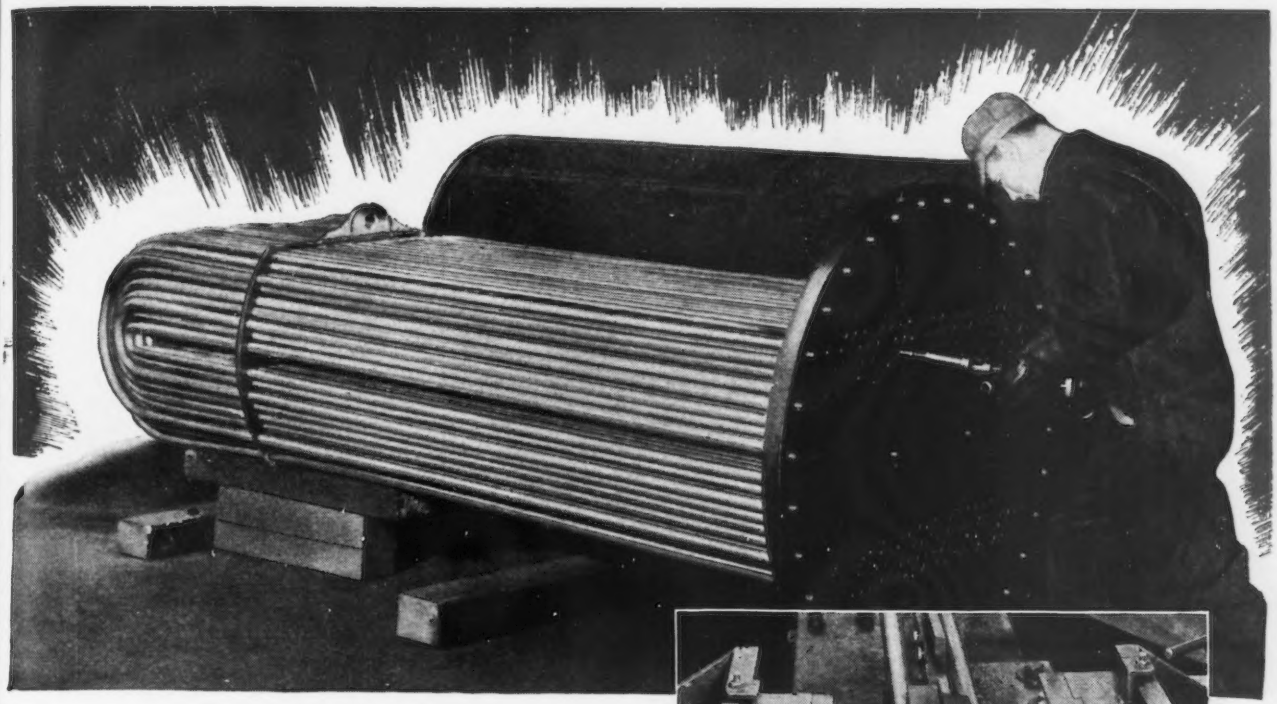
Tempilaq: Liquid which adheres to glazed or highly polished surfaces to indicate temperatures. Tempil Corp., 132 W. 22nd St., New York 11.

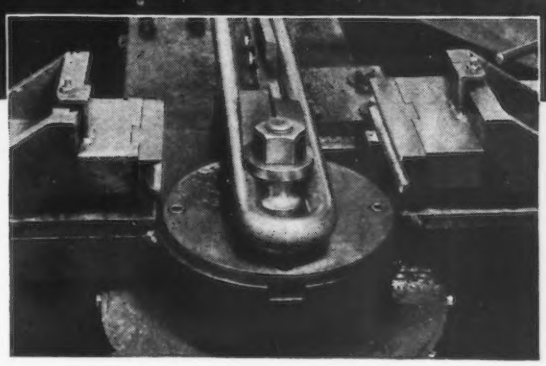
Tempilaq: Rapidly drying suspension; dried smear melts sharply at predetermined temperature; available from 125° to 1600°F in handy intervals. Tempil Corp., 132 W. 22nd St., New York 11.

Tempil Pellets: Small, pill-like tablets used for indicating temperatures. Tempil Corp., 132 W. 22nd St., New York 11.

Tempilstik: Temperature-indicating sticks, each stick having a specified melting point (from 125° to 1600°F) used to determine preheating temperatures for welding, stress-relieving, etc. Tempil Corp., 132 West 22nd St., New York 11.

Tempilstiks: Crayon-like compounds for marking hot surfaces for temperature determinations. Tempil Corp., 132 W. 22nd St., New York 11.





they bend this stainless tube with flowers

Note the unusually tight return bends in this heating coil unit. The tubes are tough, corrosion resistant stainless steel, yet the inside bend is only 1½" mean radius—on a 1¼" O.D. x 16 ga. tube!

It wasn't done without difficulty. The tube is bent on an automatic machine with ball-type mandrel. Trouble was, the ball, after only a few bends, picked up a heavy burr. Then, on a tight return, the tubes would invariably chatter, sometimes break. Worse yet, constant redressing of the ball reduced its size—on larger bends, the extra clearance made tubes wrinkle.

Production was at a standstill, until a Frasse engineer noticed that the mandrel lubricant was being forced out by the extreme pressure. From a nearby drugstore, he took "flowers" of sulphur, mixed it with auto grease in proportion, and thinned the mixture* down with machine oil to the consistency of soft butter. This was rubbed well into the mandrel surface, then applied as a heavy coating. Tubes were bent to all radii without further trouble.

Frasse, with its wide range of shapes, grades and sizes, is an excellent source for your stainless steel. More than that, Frasse knows how to help you in stainless applications. Call us. *Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Radcliff 5-7100) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Avenue, Syracuse 4, N. Y. (Syracuse 6-2103) Jersey City • Hartford • Rochester • Baltimore*

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bars
sheets
plates
strip
angles
tube
pipe
fittings
wire

10,000 TRADE NAMES

Template: White metal. Bulls Metal & Melloid Co., Ltd., Glasgow, Scotland.

Tenem: High-strength bronze alloys containing beryllium with all-around properties comparable to the high-strength aluminum and manganese bronzes. Beryllium Corp., Reading, Pa.

Tenite: Plastic pellets for air blasting metal products to impart a fine finish. Tennessee Eastman Co., Kingsport, Tenn.

Tennal: Aluminum alloys with Cu, Si, Zn for crankcases, oil pans, cylinder heads and light alloy parts. National Bronze & Aluminum Foundry Co., 4403 St. Clair Ave., Cleveland.

Tensiometer: Instrument for compensating for tension in hacksaw blades. Millers Falls Co., Greenfield, Mass.

Tens-O-Trol: Remote indicating dynamometer for reading tensions and weight at points removed from master transmitter station. W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44.

Tenual: Aluminum alloy with high copper, Fe-Mg for pistons, valve tappets, guides. National Bronze & Aluminum Foundry Co., Laisy and Thomas Aves., Cleveland.

Teplon: Plastic which withstands every known solvent up to 575°F. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Tercod: Crucibles for the melting of copper alloys. Electro Refractories & Alloys Corp., 344 Delaware Ave., Buffalo 2.

Terposol: Terpinyl ether for paint and varnish removers, and in high-bake enamels to improve flow and leveling. Hercules Powder Co., Wilmington, Del.

Teton: 1.3 Cr high-carbon steel for bearing balls and races, dies. Allegheny-Ludlum Steel Corp., Oliver Bldg., Pittsburgh.

Texdrive: True groove light cast iron V-belt sheaves. Allis-Chalmers Mfg. Co., Milwaukee 1.

Texrope: V-belt drive products. Allis-Chalmers Mfg. Co., Milwaukee 1.

Texslide: Motor bases for use with wide range texrope drives. Allis-Chalmers Mfg. Co., Milwaukee 1.

Texsteel: Pressed steel V-groove sheaves. Allis-Chalmers Mfg. Co., Milwaukee 1.

Tex-Til: Type casing for silent chain drives. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Textolite: Phenolic-resin compounds. General Electric Co., Schenectady.

Texverse: Variable pitch V-belt sheave. Allis-Chalmers Mfg. Co., Milwaukee 1.

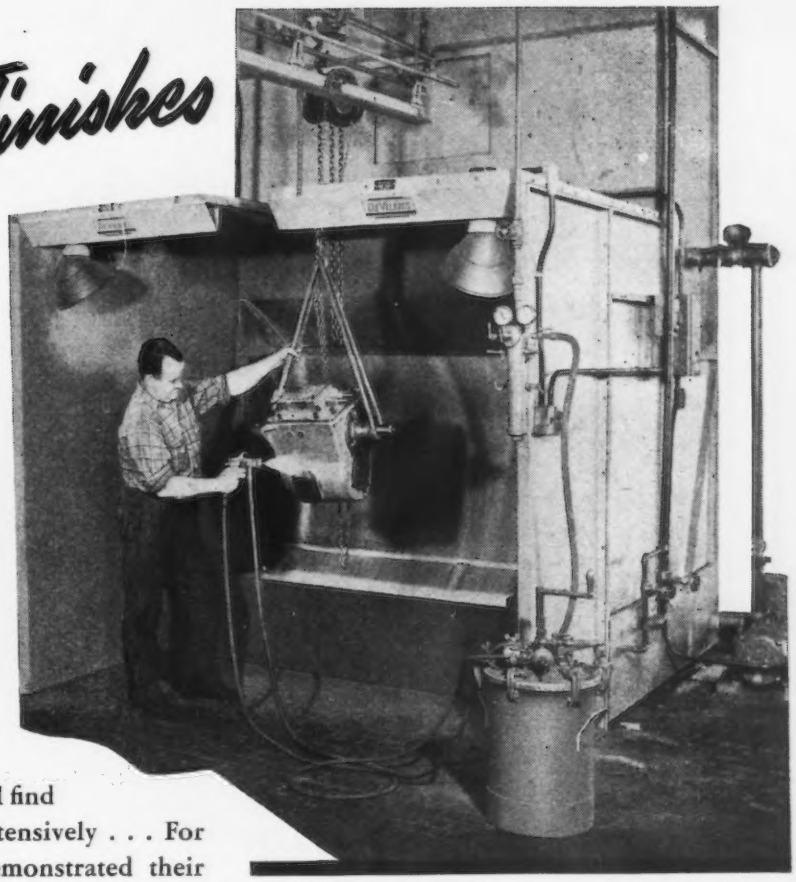
Texway: Motor bases for use with Texrope drives. Allis-Chalmers Mfg. Co., Milwaukee 1.

Thermal: Sand reclamation systems. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Thermalarm: Indicator to check electrical distribution system load. Eastern Specialty Co., Philadelphia 40.

Thermalized No. 2: Cold-worked furnace-treated bar steel combining the very minimum of

For the Finest Finishes



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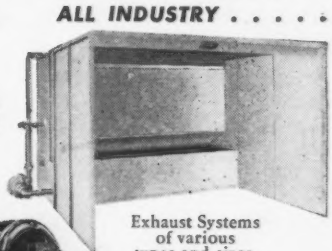
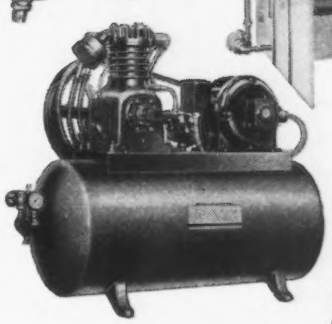


Exhaust Systems of various types and sizes.



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HOSE & CONNECTIONS

10,000 TRADE NAMES

warpage with free machinability. La Salle Steel Co., P. O. Box 6800-A, Chicago 80.

Thermalloy: Heat-resistant steel with high chrome and Ni-Mn-Si; for annealing boxes, lead pots, pyrometer tubes. Electro-Alloys Co., 1934 Taylor St., Elyria, Ohio.

Thermalloy: High nickel-chromium alloys with Fe-Si-Mn for carburizing boxes, retorts, furnace parts. Electro-Alloys Co., 1938 Taylor St., Elyria, Ohio.

Thermalloy: Heat-resistant alloy steel. American Brake Shoe Co., 230 Park Ave., New York 17.

Thermalloy: Same as Amsco.

Thermalloy: Ni alloy with Cr-Mo-Fe; for carburizing boxes, rolls, grids, furnace castings. Electro-Alloys Co., Elyria, Ohio.

Thermax: Series Cr-Ni-Fe alloys for heat-resistant parts. Deutsche Edelstahlwerke A. G., Krefeld, Germany.

Thermax: Shockproof industrial X-ray tube. Machlett Laboratories, Inc., Springdale, Conn.

Thermicast: Special material for producing steel castings by use of thermit reaction. Metal & Thermit Corp., 120 Broadway, New York.

Thermimphy: Cr-Mo-V steel for high-temperature service, also for gears, crankshafts. Soc. Anon. de Commentry, Fourchambault et Decazeville, Paris, France.

Thermisilid: Special acid-proof and heat-resisting cast iron with 15 Si for chemical equipment, construction. Fried Krupp, A. G. Essen, Germany; Thos. Prosser & Son, 122 Wall St., New York.

Thermix Multicyclone: Dust collectors. Prat-Daniel Corp., East Port Chester, Conn.

Thermo: Iron alloy for general use. Halcomb Steel Div., Crucible Steel Co. of America, Syracuse, N. Y.

Thermo: Nickel babbitt for bearings. Buffalo Foundry & Machine Co., 1543 Filmore Ave., Buffalo.

Thermo-Con: Cellular expanded cement, through addition of aerating compound. Higgins, Inc., New Orleans.

Therm-O-Flake: Insulating granules, concrete, blocks, etc., for high-temperature furnaces. Illinois Clay Products Co., Joliet, Ill.

Thermoflex: Thermostatic and contact alloy. Wilkinson, William, Shustoke, England.

Thermoil-Granodine: Chemical for developing crystalline coatings of iron and manganese phosphates on ferrous metals which when oiled, will prevent rust and minimize wear on friction surfaces. American Chemical Paint Co., Ambler, Pa.

Thermokoat: Foundry mold coating. Independent Foundry Supply Co., 2325 E. 38th St., Los Angeles 11.

Thermo-Lectric Babbitt: Lead-tin-antimony-copper babbitt for bearings. Buffalo Foundry & Machine Co., 45 Winchester Ave., Buffalo 4.

Thermometal Ruflex: Thermometal for steam traps, gas pilot controls. H. A. Wilson Co., 107 Chestnut St., Newark, N. J.

10,000 TRADE NAMES

Thermo-Namel: Porcelain-enameled steel sheets, in various colors, for housing panels. Higgins, Inc., New Orleans.

Thermonic: High-frequency electronic generators for heating metals. Induction Heating Corp., 387 Lafayette St., New York 3.

Thermopane: Transparent, factory fabricated, insulating glass unit composed of two or more panes of glass separated by a layer of captive air hermetically sealed with a metal-to-glass bond. Libbey-Owens-Ford Glass Co., Toledo 3.

Thermotomic: Exothermic refractory compounds for gates of foundry molds, ingot tops, etc. Pittsburgh Metals Purifying Co., Pittsburgh.

Thinsteel: Precision cold-rolled carbon, stainless and alloy steel strip. Cold Metal Products Co., Youngstown 1, Ohio.

Thin-Wall: See Gathman.

Thiokol: Synthetic rubbers; water dispersions as protective coating against gasoline and chemicals; liquid polymers for caulking compounds, adhesives and for impregnation. Thiokol Corp., 780 N. Clinton Ave., Trenton 7, N. J.

Thoma Strip: Steel strip, plain, electro-coated brass, nickel, tin, zinc, and various lacquers. Thomas Steel Co., Warren, Ohio.

Thomas Disintegrator: Machine for the removal of broken taps, drills, reamers and for scarifying dies or the piercing of armor plates or any hardened parts. Clinton Machine Co., Clinton, Mich.

Thor: Firebrick. Mexico Refractories Co., Mexico, Mo.

Thor: Portable electric and pneumatic tools. Independent Pneumatic Tool Co., 602 W. Jackson Blvd., Chicago 6.

Thoro-Mix: Self-contained single paddle mixers. Link-Belt Co., 220 S. Belmont Ave., Indianapolis 6.

Thread Roll-Snap Gages: Roll-type thread snap gage. Sheffield Corp., Box 893, Dayton 1.

Thredcheks: Instruments combining rolls with an indicator to check the assembly and pitch diameter of threaded parts. Sheffield Corp., Box 893, Dayton 1.

Thredkut: Heavy-duty petroleum-base cutting oil used for difficult metal-cutting operations, blended with low-cost blending oils for less difficult jobs. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Thredkut 99: Heavy-duty petroleum-base cutting oils for metal-cutting operation. D. A. Stuart Oil Co., 2727 S. Troy St., Chicago 23.

Thredstamp: Process incorporating precision threading with metal stamping in one operation. Tubing Seal-Cap, Inc., 2810 E. 11th St., Los Angeles 23.

Thredwel: Hot-rolled bars, free-machining bolt and screw stock, of AISI analyses B-1112 and C-1120. Horace T. Potts Co., Erie Ave., and D St., Philadelphia 34.

(To be continued)

Information Free

(1) Precision Casting:

Series of booklets presents pertinent information on precision casting processes utilizing Kerr equipment and materials, along with description and specifications of machines. Detailed treatment of precision casting methods and related subjects are found in the booklet, "Fundamentals of Industrial Precision Casting," which contains photographs illustrating basic steps. *Kerr Mfg. Co.*

(2) Crucible Melters' Handbook:

Fourth revised edition describes crucible furnaces, fuels, also the charging, storing and handling of crucibles. Typical installations are pictured, and included are tables of alloys, melting points of many metals and dimensions of standard size crucibles. *Crucible Manufacturers Assn.*

(3) Air Filters:

Filtration of compressed air through a manufactured porous medium made from aluminum oxide crystals bonded together with a silica bond is described in bulletin 105. Application of this filter to water and chemicals is also covered. *R. P. Adams Co., Inc.*

(4) Spray Booths:

Principle of the Hydro-Whirl wet type spray booth is explained in technical bulletin No. 201, which also lists salient features and advantages of batch type, down draft and conveyorized spray booths. How to select a booth is also discussed. *Peters-Dalton, Inc.*

(5) Hydraulic Power Units:

Bulletin 45361 gives engineering information, installation drawings and application photographs of the three sizes of "package units" of hydraulic power for feeding and rotating cutting tools. Specifications and feature details of each unit, including the new No. 20 model, are also given. *Ex-Cell-O Corp.*

(6) Electrical Disintegration:

Folder describes Elox method of electrical disintegration for removal of broken reamers, taps, drills, studs, etc., and its new application for die-cutting without milling, drilling or chipping. Portable and bench machines with recirculating and self-contained coolant systems are illustrated. *Elox Corp.*

(7) Aluminum Casting Alloys:

Forty-four page booklet contains data on specifications, mechanical properties and foundry characteristics of aluminum casting alloys. Chapters are devoted to fundamental information about the metallurgy of aluminum, heat treatment, aging, laws of gas absorption, shrinkage, etc. *Federated Metals Div.*

(8) Carboloy Dies:

Booklet D-120 discusses advantages of Carboloy cemented carbide dies for blanking, cupping and drawing dies, and describes the use of Carboloy for die and punch operations on all types of sheet metal in a wide range of thicknesses. Numerous jobs, selected to show versatility of carbide dies, are illustrated and described. *Carboloy Co., Inc.*

(9) Pallet Lift Truck:

Hand operated hydraulic pallet lift trucks in capacities of 3500 and 4000 lb. are fully described in bulletin 220 with photographic illustrations showing method of operation, recommended pallet construction and adaptability of various materials to palletizing. *LYON Raymond Corp.*

(10) "Controlled-Air" Power:

Foto Facts File sheets show the effective use of air in speeding production in such operations as powered feed for pressing, in milling, reaming, facing, riveting and broaching. Setups are shown and case histories of the units are sketched. *Bellows Senacon Co.*

(11) Welding Rods:

Low-temperature welding and brazing rods and fluxes are described in booklet, giving properties and characteristics of each. Tells about savings resulting from use of low-temperature welding and serves as a catalog and instruction guide for the company's products. *All-State Welding Alloys Co.*

(12) Ferrous Alloy Castings:

Purpose of booklet is to show photographic exhibits of Strenes Metal castings, chiefly dies employed for drawing and forming operations by metal fabricators. Parts castings shown include pump shell, impeller, melting pots, etc. Text is brief and free from technicalities. *Advance Foundry Co.*

(13) Tempering:

Tempering in Surface Combustion standard rated furnaces is described in bulletin SC-133. Profusely illustrated, it describes types of furnaces recommended for tempering of various kinds and shapes of ferrous objects. A table giving the effects of tempering temperatures on hardness is included. *Surface Combustion Corp.*

(14) Tachometers:

Frahm tachometers for indicating speed or rate of vibration of turbines, centrifugal pumps, motors, etc., are described in bulletin 1810. Construction features, including the principle of resonance, of round, rectangular and miniature types of tachometers for permanent mounting or hand use, are discussed. *James G. Biddle Co.*

(15) Tool Dressing Fixture:

How Gem-Flex, a wheel and tool dressing fixture, is used for radii dressing, in convex and angle dressing surface grinders, for positional grinding, complex drilling and other machine shop work is illustrated in folder. Vise capacity is 1¼ in. and tool bit slots range from 3/16 to 7/16 in. *Allied Machinists of Waltham.*

(16) Chain Hoists:

Complete line of spur geared (high speed) and differential chain hoists, together with army type Timken equipped trolley hoists, are listed in catalog G-558. Care and use are discussed, and specification tables, sectional and photographic views are included. *Chester Hoist Co.*

(17) Pickling and Washing:

Advantages of a recently introduced spray type pickling and washing machine over the dip method of pickling and washing are described in this bulletin along with illustrated sketches. The machine is individually engineered for each specific operation. *B. F. Goodrich Co.*

(18) Capacitor Start Motors:

Included in Bulletin X5526 are illustrations of the company's complete line of ⅛ to ¾ hp capacitor start motors and details of construction of various parts of the motor, complete dimensions and diagrams and rating standards in accordance with the new NEMA fractional horsepower motor standards. *Emerson Electric Mfg. Co.*

(19) Infrared Lamps:

Illustrated folder Y-689 contains descriptions, photographs and technical data on all the industrial heat lamps manufactured by GE, and points out many of the uses to which the lamps are now being put. Included in this folder are the latest lamp list prices. *General Electric Co.*

NOTICE TO READERS: Offer limited to two months from date of issue.

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(20) Liquid Conditioning:

Most advanced and modern methods and apparatus for conditioning water and other liquids are described in Catalog G. Explanations are given of the many different types of water conditioning processes and the applications, advantages and limitations of each type. *Liquid Conditioning Corp.*

(21) Concentricity Inspection:

Use of the V-Liner for accurate checking of concentricities, internal and external, on round parts of varying diameters and bores, is set forth in folder, with illustrations clarifying applications to various jobs. *Swanson Tool & Machine Products, Inc.*

(22) Protective Packaging:

Brochure No. 5559 presents the what, when, why and how of Cocoon protective packaging for anything from a ball bearing to a locomotive. Technical facts and figures on this plastic packaging process are given. *R. M. Hollingshead Co.*

(23) Portable Floor Cranes:

Construction details of portable floor cranes of from 1 to 3-ton capacity are presented in folder, which also illustrates applications of this 4 in 1 tool—a crane, a hoist, a shop truck and a portable ladder. *Hill Acme Co.*

(24) Motor Generators:

Line of motor generators illustrated in bulletin 208 cover electrolytic, battery-charging and diverter-pole models. Outstanding features are also listed for frequency changers, industrial dynamometers and special motors and generators. Separate bulletins furnish complete information. *Electric Products Co.*

(25) Steel Shapes:

Booklet lists number of standard steel shapes developed and offered without die or tool charges by the company which has a die building shop and presses capable of forming metal 1 in. thick. General scope of manufacture is cold forming and working of steel. Olympic bronze, Herculoy, Monel and stainless are discussed. *Commercial Shearing & Stamping Co.*

(26) Oxyarc Metal Cutting:

Oxyarc process for cutting stainless and alloy steels and nonferrous metals in any shape and in any position by utilizing combination of an electric arc and a stream of oxygen is explained in pamphlet. Process can be used anywhere an ac or dc welder and bottled oxygen are available. *Arcos Corp.*

(27) Tracing Material:

New translucent tracing material, developed to provide clean, easy-to-read engineering prints, is described in this pamphlet. The material, called Kodatrace, is made of safety-base film tinted blue and has a fine-grained matte surface suitable for use with pencil or ink. Changes and erasures can be easily made. *Eastman Kodak Co.*

(28) Flame Hardening Steel:

This booklet outlines in detail advantages of E-4 flame hardening cast steel. The basic idea behind E-4 is its widespread adaptability to various types of dies. E-4 is an air hardening steel which can be hardened to an exceptional degree at selected sections by the simple methods described and illustrated in this folder. *Detroit Steel Casting Co.*

(29) Toggle Clamps:

Catalog 47 covering De-Sta-Co toggle clamps contains detailed specifications of the entire clamp line with illustrations of many applications. A section is devoted to data on arbor spacers, shims, shim and feeler stock and miscellaneous job stampings. *Detroit Stamping Co.*

(30) Diesel Cooling Systems:

Bulletin 351, profusely illustrated with pictures, diagrams and blueprints, will help solve many of the problems encountered every day in diesel engine cooling. It shows how water jacket scale, overheating, costly breakdowns, and insurance rates can be greatly reduced or entirely eliminated. *Binks Mfg. Co.*

(31) Welding Electrode Chart:

Comparative chart of steel electrodes lists electrodes of 17 manufacturers against AWS classifications. *Champion Rivet Co.*

(32) Electrofluid Drive:

Book No. 2085 describes the Electrofluid Drive, a motorized-hydraulic combination in a packaged unit, consisting of a general purpose induction motor, flange mounted to a housing and a hydraulic coupling. Typical applications are illustrated. *Link-Belt Co.*

(33) Ball and Roller Bearings:

Compilation of data obtained from manufacturers' catalogs enumerates, in 220-page catalog J, obtainable bearing makes, types and sizes available through branch offices of the company. Lists include ball and roller bearings, thrust bearings, transmission units and specialties. *Ohio Ball Bearing Co.*

(34) Band and Hack Saws:

Handbook gives information to the operator of hack saw machines and the user of hand saw and metal cutting band saw blades on how to obtain maximum production from such equipment. Operating hints for using various type blades are given with blade specifications listed in chart form. *Capewell Mfg. Co.*

(35) Hydraulic Oil Purifiers:

Folder points out the way to stop down time and expensive repairs on hydraulic presses, machine tools, molding machines, diecasting presses, by effective purification of hydraulic oils. Explains oil purification and what it accomplishes, types of purifiers available and typical installations with illustrations. *Honan-Crane Corp.*

(36) Core, Mold Coatings:

Bulletin gives brief description of seven products developed to produce better castings for foundry and pattern shop. Check sheet lists where and how products are used. Products include permanent mold and die coatings, pattern surface protector and a core coating compound which imparts a thin, hard, tough, moisture-proof coating to the core surface. *Foundry Rubber, Inc.*

(37) Welding Cast Iron:

Instructions for making machinable arc welds in gray iron castings are given in bulletin, including current settings, arc manipulation and preheating temperatures. Metallographic studies and hardness surveys are used to explain recommended procedures. *C. E. Phillips & Co., Inc.*

(38) Emulsion Spray Buffing:

What, why and how of an emulsion spray method of applying buffing composition which gives uniform coating to the buff at all times is explained in folder. Details on apparatus and spray compositions and advantages of this method are covered. *Lea Mfg. Co.*

(39) Pipe Line Compensators:

One-piece all-metal flexible tube compensators, designed to compensate for or absorb motion inherent in general pipe line installations are explained in bulletin which also gives specifications and data for installation. Various uses are described with diagrams of typical applications. *Chicago Metal Hose Corp.*

(40) AC and DC Generators:

Construction features of a line of ac 500 w to 150 kw and dc 50 w to 200 kw generators and several motor generator sets for producing electricity for light or power are described in Form 646. Various models are illustrated. *Century Electric Co.*

(41) Carbide Gage Blocks:

Toughness, wear and corrosion resistance, stability and accuracy are some of the features of Lifetime carbide gage blocks stressed in folder. Sets and individual blocks are manufactured in guaranteed tolerances of AA, A and B, in inches or metric sizes. *Fonda Gage Co.*

(42) Drill Chuck Selector:

Selecting the right drill chuck for any straight shank drill is made easy by means of a slide rule type selector. With one simple setting of this selector, it is possible to determine instantly the catalog number of the style B drill chuck to be ordered. The selector also shows recommended speeds and feeds for drilling various types of materials. *Scully-Jones & Co.*

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Buy American Provision Will Not Be Used To Justify High Bonuses

Washington

• • • **The "Buy American"** provision of the Strategic and Critical Materials Stockpiling Act will not be used to justify payment of unwarranted bonuses above existing market prices to American producers, according to John R. Steelman, assistant to the President.

In a letter to Richard R. Deupree, executive chairman of the Army and Navy Munitions Board which, with the Bureau of Federal Supply, has responsibility for stockpile purchases, Mr. Steelman said the purpose of the "Buy American" Act of 1933, which Congress later applied to stockpile purchases, was to have the government buy domestically-produced materials unless their purchase is not in accord with the public interest or their cost is unreasonable.

Misunderstanding of the "Buy American" provision, Mr. Steelman said, has led some producers of materials needed for the strategic stockpile to quote prices to the government which are in excess of domestic market prices. Nor should a domestic producer expect an award if he bids above the world market price, merely because he feels that the government will be compelled to buy from him at a premium."

Treasury Dept. Circular No. 37 directed, in 1934, that a differential of 25 pct should apply under the "Buy American" Act in favor of domestic articles offered for sale to the government in competition with foreign-made articles.

"If an item produced in this country normally sells in the domestic market in competition with foreign material at a quoted market price," Mr. Steelman wrote Mr. Deupree, adding that there is no basis for the expectation that the government will purchase the item at a price above the market, some concession from the market price might even be expected.

"If domestic production of an item is normally small and little or none of it is sold in competition with foreign production, there

may not be any recognized domestic market price for the material as distinguished from a world market price. In such cases a domestic bid which is greater than the foreign bid should be accepted only if: (1) It does not exceed the maximum allowable differential, (2) is justified by a prudent governmental buying policy, and (3) is reasonable in the light of relevant price factors.

Domestic purchases inconsistent with the public interest, must be analyzed case by case, Mr. Steelman said.

Says Government Okayed Exports of Coal and Pig Iron Needed by Plants

Washington

• • • **Charges that under government policies and authorizations pig iron and coal needed by West Coast foundries and steel plants have been diverted for export purposes were made to Congress recently by Rep. Alfred J. Elliott (D-Calif).**

This information came to light, he said, when his office attempted to arrange for additional pig iron shipments to relieve California hardship cases.

"We found at Los Angeles that there was a ship loaded with 6000 tons of pig iron en route to Russia," he declared. "Also waiting to be loaded was 1500 tons of coal from Utah. Yet, the people of Utah say they cannot produce more pig iron without more coal."

Authority for sale of the coal was given the supplier through telegraphed instructions issued by the State Dept., according to Mr. Elliott.

The California Congressman charged that not only was the metal being shipped abroad for direct consumption but that it was being bought in Mexico and then shipped back to West Coast users.

A check by the Commerce Dept's. Office of International Trade does not reveal any pig iron shipments to Russia during the first 11 months of 1946. Total exports of pig iron for the 11-month period, the OIT said, amounted to 84,105 long tons—including 9913 tons to Canada. Coal shipments for the same period averaged about 1,750,000 tons monthly.

December Production Of Pig Iron in Canada Hit Record for the Year

Toronto

• • • **Canadian pig** iron production attained its highest monthly record for the year in December, totaling 161,464 net tons, or 69.9 pct of total rated capacity, and compares with 135,269 tons for November when the rate was 58.5 pct, and 135,225 tons in December 1945. During December output included 125,046 tons of basic iron, of which 121,012 tons were for further use of producers and the balance for sale; 25,035 tons of foundry iron, of which 24,899 tons were for sale and 136 tons for further use; 11,383 tons of malleable iron, all for sale.

In the month under review 10 blast furnaces were blowing and 4 blown out of the total of 14 stacks in Canada. Blast furnace charges included 290,075 tons of iron ore; 18,240 tons of mill cinder, scale, sinter, etc., and 5170 tons of scrap iron and steel.

As a direct result of strikes which tied up the basic steel industry of Canada from the middle of July until the end of September, pig iron production for the year 1946 fell sharply below that of the previous year and was at the lowest total since 1940. For 1946 output totaled 1,403,758 net tons compared with 1,777,958 tons in 1945 and 1,852,626 tons in 1944.

Canada's total pig iron capacity is 2,770,760 net tons per year, divided as follows: Algoma Steel Corp., Sault Ste. Marie, 5 furnaces, 1,062,000 tons; Steel Co. of Canada Ltd., Hamilton, 3 furnaces, 757,000 tons; Canadian Furnace Co., Ltd., Port Colborne, 2 furnaces, 221,760 tons, and Dominion Steel & Coal Corp., Ltd., Sydney, N. S., 4 furnaces, 730,000 tons per year.

Production of ferroalloys in December amounted to 11,766 net tons compared with 9370 tons in November and 15,456 tons in December, 1945. Output for the month included ferrosilicon, silicomanganese, ferromanganese, ferrochrome, chrom-x and ferrophosphorus.

For the year 1946 production of ferroalloys totaled 116,995 net tons, against 186,978 tons in 1945 and 182,428 tons in 1944.

Following are comparative

monthly figures for pig iron and ferroalloys for 1946 in net tons:

1946	Pig Iron	Ferroalloys
January	143,685	10,878
February	143,171	10,872
March	157,936	8,405
April	142,240	13,083
May	159,101	14,069
June	129,890	11,684
July	64,472	6,243
August	46,494	6,013
September	45,078	6,164
October	74,958	8,448
November	135,269	9,370
December	161,464	11,766
Total	1,403,758	116,995

Canadian Production Of Ingots and Castings Advanced in December

Toronto

• • • **Production of** steel ingots and castings in Canada rose to 78.5 pct of rated capacity in December when output totaled 237,300 net tons, compared with 222,644 tons or 73.7 pct for November and 219,281 tons in December 1945.

Charges to steel furnaces in December included 120,679 tons of pig iron; 58,785 tons of scrap of consumers' own make and 75,361 tons of purchased scrap.

Output of steel ingots and castings for the year 1946 at 1,403,758 net tons compares with 1,777,958 tons for 1945 and 1,852,628 tons for 1944. The decline in output last year was almost entirely due to strikes and labor troubles at the basic steel mills, which entirely cut off production by Algoma Steel Corp., and Dominion Steel & Coal Corp., and reduced output to less than 50 pct at the Steel Co. of Canada Ltd.

Canada's total steelmaking capacity is 3,623,400 net tons a year divided as follows: Ingots—basic openhearth, 2,785,400 tons, and electric, 573,200 tons; steel castings, 264,800 tons.

Following are comparative monthly totals for steel ingots and castings for 1946 in net tons:

1946	Steel Ingots	Steel Castings
January	236,479	8,144
February	226,273	7,620
March	240,589	8,528
April	239,463	8,056
May	251,697	7,929
June	208,296	6,565
July	130,754	5,160
August	82,707	6,022
September	71,363	5,201
October	117,669	6,172
November	216,830	5,314
December	231,317	5,983
Total	2,253,437	81,194

Johnson Discusses The Distribution Problem In The Automotive Field

Chicago

• • • **Courtney Johnson,** assistant to the chairman, Studebaker Corp., at the conference of distribution conducted by the Chicago Assn. of Commerce & Industry in Chicago, discussed the problems of distribution in the automobile industry which they are facing this year. Mr. Johnson pointed out that statisticians have established that during the 4 war years production of some 14 million automobiles was lost; automobiles in use at an average age of some 9 years as against the prewar average of 5½ years; population has increased over 3 million families from 1941 to the present; new housing is being built based upon automobile transportation. These facts, the speaker said, all indicate an abnormally high continuous demand for new automobiles.

Mr. Johnson said that he preferred to use the one set of facts which are very clear. "There are nearly 3 million less automobiles in use now in this country than there were in 1941. In addition to this, the prewar rate of scrapping cars averaged about 2 million cars per year, and we may properly assume that with the average age of cars in use increased from 5½ years to 9 years, at least that rate of scrapping will take place this year.

"Consequently, we have clearly for this year a demand for cars of 5 million or over, just to replace the war-induced gap in our transportation." The speaker backed these data up by informing the group that from the result of a recent survey made by the Federal Reserve Board, it was found that over 5 million families want to buy a car as soon as possible. Aside from this demand Mr. Johnson added, "This calculation does not take into consideration the fact that a large proportion of the 3 million new families in our population must have cars, all of which would lead us to believe that the demand for cars this year is considerably over 5 million."

With this huge demand in view, the speaker flatly said, "The industry cannot, in my opinion, build 5 million automobiles in 1947. Among several limiting factors there is one which stands out. To build this number of automobiles, plus the continuance of truck production at the rate of approximately 1 million units per year, plus the truck trailers, service parts and accessories needed, would require in the neighborhood of 9½ million tons of flat-rolled stock, both hot and cold-rolled sheets and strip steel. Total capacity of this classification of steel appears to be about 15 million tons per year. It would be too much to expect that the automobile industry will approximately use 2/3 of all the flat-rolled stock to be produced."

Mr. Johnson also remarked that if the industry could obtain about half of the flat-rolled stock produced, it would be possible to manufacture about 4 million automobiles and a million trucks in 1947. The automotive expert was of the opinion that this percentage of flat-rolled products requirements was not an unreasonable proportion of the sheet and strip steel production for the automotive industry based upon prewar experience. He said further, that the simple facts indicate that there is more demand for new automobiles than the industry can possibly supply this year, and that the principal question then "is not one of demand but whether the people who want these new automobiles can pay for them."

Mr. Johnson pointed out "Today's prices for automobiles are up roughly 50 pct above those of prewar. While some income groups have not had income increases to compensate for the reduced purchasing power of the dollar, for instance people living on fixed incomes, teachers, government employees, and some of the management group, the lower income groups, and particularly, industrial workers, have had in dollars 50 pct or more increase. Since some two-thirds of the market for automobiles is in these lower income groups which have benefited most, there may well be a broader market for automobiles at current prices and current incomes than the prewar market at prewar prices and income."

The group was told that it seems very doubtful that lower cost will produce lower prices this year. The possibility of installment buying or any extension of credit on such terms as are proved to be safe, the speaker contended, may possibly permit those in the lower income groups who must have automobiles to secure them.

The speaker concluded by say-

NO TOY AT ALL: *British automotive salesmen are taking scale models of their products with them on calls to foreign clients. This scale model of a Vauxhall Bedford semi trailer is reported to be complete and correct in every detail.*

ing, "The distribution problem, therefore, in the automotive industry this year is really a distribution problem rather than a sales problem. Our problem is to distribute available supply fairly amongst our dealers, so that our sales organization will be sound and secure for the future, and to work together as manufacturers and dealers to see that as far as possible the available supply is distributed to retail purchasers to take care of the most critical requirements."

CPA Reports in 1946 Farm Machinery Hit All Time Peak Output

Washington

• • • **The farm machinery** industry in 1946 chalked up an all-time peak output of $720,735,553, an 8.6 pct gain over 1945 production of $663,716,514, the Civilian Production Administration said recently. New production facilities should materially increase output in 1947, CPA stated. CPA pointed out that the 1946 output represented an actual increase in production because price advances were eliminated in comparing the production of the two years. Despite the continued large world-wide demand for farm machinery, CPA said, 1946 exports were only 10.5 pct of total production, compared with 12 pct in 1945.

December production was slightly above the average rate in the other months of 1946, and the $66,937,415 output represented a 3.7 pct gain over November and a 21 pct increase over December 1945. Export shipments during December 1946 increased to 14 pct of total production against 10.9 pct in December 1945.

CPA said that its current report marked the last complete production statement required to be filed by the farm machinery industry. However, production reports must continue to be filed on farm wheel tractors, CPA said.

Output of repair parts and attachments continued to be the largest production item in 1946. These two items, amounting to $227,739,371, represented 31.6 pct of total production, while 1945 production ($240,126,753) accounted for 36.2 pct of output.

Ten Detroit Foundries Sign UAW Contract For Increase of 8¢ an Hr

Detroit

• • • **Effective Jan. 6** a new contract between 10 Detroit gray iron foundries and the UAW-CIO has been signed calling for a wage increase of 8¢ per hr according to L. C. Batdorff, manager of the Detroit Gray Iron Foundries Assn. Mr. Batdorff who represented the foundries in negotiating the agreement explained that the new contract is for 4 months only but may be extended by mutual consent.

Original union demands included in addition to wage adjustments, the check-off, union shop and social benefits for workers including insurance paid by the employer and retirement pay. None of these demands are included in the new contract according to Batdorff.

Batdorff explained that the recent negotiations between the Detroit Gray Iron Foundries Assn. and the UAW-CIO have always been concluded without a work stoppage and that there have been no strikes since the present method of handling labor problems was adopted 10 years ago.

A spokesman of the union who confirmed signing of the agreement explained that while the present agreement includes all but three of the major Detroit gray iron foundries, UAW-CIO agreements at present cover 275 foundries nationally and the present agreement should not be interpreted as an industrywide agreement.

Three Detroit foundries represented by AFL, while not participating in the present contract, have in the past followed the wage pattern established by the UAW-CIO group. Approximately 2000 employees are covered by the UAW-CIO agreement.

Detroit gray iron foundries included in the contract are Apex, Eureka, Central, Detroit Gray Iron, Kahl, Grant, Schwarb, Acme, Motor Machine and Atlas.

U.S. to Cooperate With British Rubber Companies

Akron, Ohio

• • • **Close cooperation** between United States and British rubber companies was seen as the result of the announcement that U. S. Rubber Co. has acquired an interest in the North British Rubber Co., Ltd., Edinburgh, Dumfries in London, recently announced by Herbert E. Smith, president of U. S. Rubber Co.

Under the agreement the British concern will be entitled to full technical assistance and participation in the benefits of the American company's research and development program.

The terms of the agreement between the two companies provide that the North British company will manufacture goods for U. S. Rubber's British subsidiary, the Dominion Rubber Co., Ltd., for resale in Great Britain and for export from Great Britain.

Season 1946
Grades of Lake Superior Iron Ore Shipped By Lake

(Thousands of Gross Tons)

TOTALS BY RANGES

U. S. Ranges	Tons	Percent of Total
Mesabi	45,179	76.88
Vermilion	1,231	2.10
Cuyuna	1,869	3.18
Total Minnesota	48,279	82.16
Gogebic	3,674	6.25
Marquette	3,052	5.20
Menominee	2,493	4.24
Total Michigan-Wisconsin	9,219	15.69
Total U. S. Ranges	57,498	97.85
Canadian		
Michipicoten	448	.76
Steep Rock	817	1.39
Total Canadian	1,265	2.15
Grand Total	58,763	100.00

TOTALS BY GRADES

U. S. Ranges	Tons	Percent of Total
Nonbessemer	45,942	78.18
Bessemer	9,041	15.39
Manganiferous	2,176	3.70
Siliceous	339	.58
Total U. S. Ranges	57,498	97.85
Canadian		
Bessemer	1,265	2.15
Grand Total	58,763	100.00

(The Lake Superior Iron Ore Assn.)

Weekly Gallup Polls

(CONTINUED FROM PAGE 105)

The vote:

	Peaceful Pct	Aggressor Pct	No opin. Pct
USA	22	58	20
Britain	23	43	34
Canada	20	58	22
Holland	14	63	23

The polls in the three foreign countries were conducted, respectively, by the British Institute of Public Opinion, the Canadian Institute of Public Opinion, and the Dutch Institute of Public Opinion.

•

• • • **With the question** of jurisdictional strikes bound to come up in Congress during the present session, a coast-to-coast survey of public opinion on the issue reveals two outstanding facts:

(1) People who are able to define the term "jurisdictional strike" vote by about two to one in favor of having Congress place a ban on this type of labor stoppage.

(2) In spite of the thousands of persons who have been involved in such strikes during recent months, in spite of the millions of words, the thousands of editorials written about the jurisdictional strikes, only one person in eight among the thousands interviewed in the present poll is able to define the term.

President Truman in his recent message to the new Congress singled out jurisdictional strikes as a kind which should be banned by Congress.

In measuring knowledge about the term and sentiment toward the jurisdictional strikes, the institute had field reporters all over the nation ask two questions.

(1) "What does the term 'jurisdictional strike' mean to you?"

Here is how the replies distribute on a correct—incorrect basis:

	Pct
Correct replies	12
Incorrect replies	17
Don't know	71

Replies were correct which indicated knowledge that a jurisdictional strike is one resulting from a dispute between two unions as to which should control certain kinds of work, certain workers, or certain areas.

The second question was asked

only of the voters who were able to give a correct answer to the first question.

(2) "Do you think Congress should or should not forbid jurisdictional strikes?"

The replies of the one out of eight able to define the term jurisdictional strike:

	Pct
Should forbid	68
Should not forbid	25
No opinion	7

On the definition of the term jurisdictional strikes:

Only one out of three among people who have attended college are able to give a satisfactory definition of the term.

Only one out of five among labor union members can define the term correctly.

The London Economist

(CONTINUED FROM PAGE 111)

quarters that Russia's plight may be the Western Allies' opportunity and that this is the right moment for hard bargaining, in which relief ought to be held out as a reward for far-reaching political concessions, is almost certainly based on a miscalculation of the mood in Russia and of the probable Soviet reactions to such a policy. The Kremlin may or may not be inclined to diplomatic conciliation. But the one thing almost certain to cause a definite stiffening in its attitude vis-a-vis the West—and a stiffening for which there would be genuine popular support in the country—would be an attempt by any Power to derive political benefits from Russian or Ukrainian starvation.

The story of relief to Russia during the 1921 famine contains a lesson and a warning. At that time the Western Powers attempted to make relief conditional upon the recognition by the Soviet Government of the Tsarist debts to foreign creditors which the Bolsheviks had refused to honor. A conference of 20 European nations that took place at Brussels in October of that year addressed an offer to that effect to Moscow. At another conference, held in Paris, the Western Powers demanded effective control over the distribution of food inside Russia.

Both demands were rejected by Lenin, who was then issuing desperate appeals for help to the peoples of the world, in which he admitted frankly that his "government was not in a position by its own means to save the starving population from death." Stalin's government is in an incomparably better position. It has not made a similar confession of impotence; and it has no need to make one. Far from producing Russian concessions, political bargaining over relief would only inflict on Russia a grievance and a wound likely to rankle, just as did the memory of 1921, over the life-time of a generation.

The comparison between 1921 and 1947 implies also a sad reflection on the moral and political standards of 1947. In spite of the attempts at bargaining over relief made in 1921, two relief organizations then hastened to the rescue of the famine stricken areas—the League of Nations' Relief Organization headed by that great humanitarian Nansen, and the American Relief Agency, headed by Hoover. Russia then was not a member of the League. Its government had not yet been recognized by the western governments.

Mr. Hoover was the spokesman of the most extreme anti-Soviet tendency in American politics; and he was still prophesying that "no resumption of production was possible in Russia under the Bolshevik regime." The Soviet rulers were ostensibly everybody's foes and nobody's allies—the "defection of Brest Litovsk" was fresh in Allied memories; and the last shots in the wars of intervention had only just been fired. Yet the strength of humanitarian feeling was still great enough to make Hoover's ARA play the most active part in relieving the famine on the Volga.

Today when famine may be stalking the famous battlefields of the recent war, the plains of Stalingrad, Kursk and Kharkov, Unrra teams are packing up and leaving. The Russians may be pardoned if they find Western charity very cold.

Freight Car Orders Up But Output is Retarded

New York

• • • **Freight car orders** placed in January totaled 9905, as compared with a monthly average of 5744 during 1946, according to S. M. Felton, president, American Railway Car Institute.

"Heavier ordering by the railroads reflects greater confidence in their financial outlook, as a result of freight rate increases granted by the Interstate Commerce Commission," Mr. Felton said.

"Of the new orders, 3400 are box cars and 4842 hoppers. There have been increased orders of these types by the railroads during recent months because of the shortages that exist. More than 20,000 box cars and 18,000 hoppers now are on order.

"The total backlog of orders, as of Feb. 1, was 75,578, including orders placed with the car building industry and in railroad shops, compared with 40,670 a year ago.

"Production during January again was disappointing, reflecting continued shortages of steel and other materials. Deliveries totaled 2982, of which 1227 were box cars, as contrasted with a potential capacity production by the car builders of 14,000 cars monthly," Mr. Felton said.

Ryan Signs Plane Contract

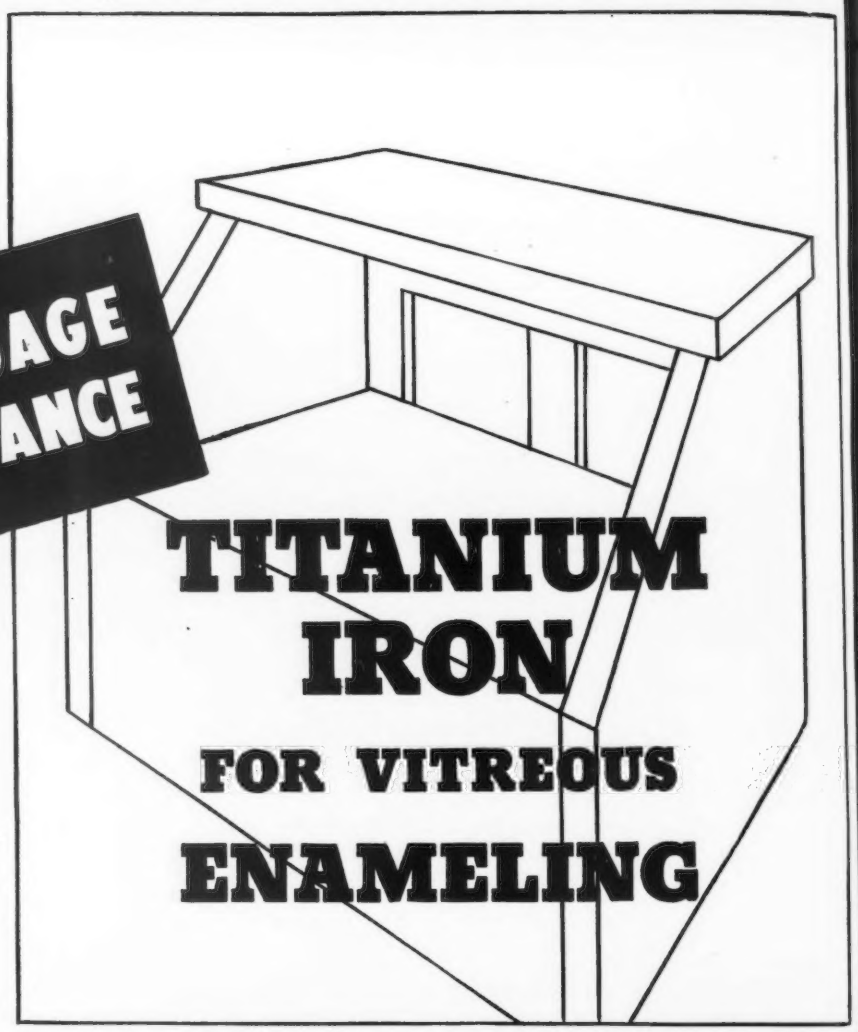
San Diego, Calif.

• • • **Receipt by the** Ryan Aeronautical Co. of a $700,000 increase in a contract with the Army Air Forces for development of a new, highly advanced-type aircraft of the company's own design was disclosed recently.

Officials of the firm declined detailed comment on the project. However, they did state that the contract is an extension of an order, never previously revealed, which they received some months ago from the Air Materiel Command, Wright Field.

Ryan officials have indicated general interest in the entire field of sonic and supersonic aircraft, both piloted and pilotless, including research into guided missiles, jet propulsion and rockets, but have issued no specific information on current projects.

THINNER GAGE SAG RESISTANCE



TITANIUM IRON FOR VITREOUS ENAMELING

ENAMELED WARE of lighter gage stock can be fabricated to desired shapes and retain a better appearance because of the increased sag resistance of Titanium iron for vitreous enameling. This particular feature is clearly demonstrated on chart at right.

Another feature is the elimination of formerly necessary ground coats. For—under proper shop conditions—the cover coat can be applied directly to the base metal. Also, these thin finishes reduce the hazards of chipping and breaking. Furthermore, at enameling heats, there is no sign of enamel boiling. During three years of both research and production experience, no case of fish scaling has been reported.

Further information is available upon request.

EFFECT OF GAGE AND COMPOSITION ON SAGGING RESISTANCE

GAGE AND COMPOSITION	DEGREE OF SAG IN %
24 Ga. Standard Enameling Iron	100
24 Ga. Titanium Steel	57
18 Ga. Standard Enameling Iron	100
18 Ga. Titanium Steel	18

The Titanium Alloy Manufacturing Company produces the titanium alloy used in the manufacture of this steel. For samples of this steel, see your steel supplier. Pending patent applications on the new enameling process and products made thereby are owned jointly by Inland Steel Company, and The Titanium Alloy Manufacturing Company under trust agreement.

TAM

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